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THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

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BARROW'S GOLDEN-EYE IN THE YELLOWSTONE NATIONAL PARK

BY M. P. SKINNER

Records of the Barrow's Golden-eye (*Glaucionetta islandica*) in the Yellowstone, are very similar to what they have been elsewhere—largely neglected. Since this bird was both resident at all times, and abundant at least in summer, I can explain the neglect only by saying a Golden-eye, as usually seen in summer when the majority of scientists visited the Park, had few distinctive marks. It then passed as a small, unimportant black, or very dark brown, duck.

Knight (1902) mentions it as occurring in Wyoming but does not record it in the Yellowstone National Park. A year later, President Theodore Roosevelt just missed being the first to record Barrow's Golden-eye there. In his "Wilderness Reserves" he says that he noted ducks on the Gardiner River on April 8, 1903. On that date, only these Golden-eyes and Mallards were likely to have been there in numbers. As he does not particularly say "Mallards", it can be assumed that he saw other kinds, probably these Golden-eyes, or perhaps both Golden-eyes and Mallards.

My own reaction to the presence of Barrow's Golden-eyes has been similar—one of neglect and silence. I first actually saw them during an extensive trip on Yellowstone Lake in 1898; yet it was not until seventeen years later that I even mentioned their name in an article. And still five more years passed before I wrote out a description, and a few additional words, in 1920.

At the end of this article there is a bibliography of twenty-one titles, of every article that I can find mentioning the bird in Yellowstone Park at all. Most of them give but a few words each; and, aside from historical and bibliographical completeness, many can be neglected. Bent (1925), Sawyer (1928), and the present paper contain all the essential material published to date about Barrow's Golden-eyes in the Yellowstone.*

*An important article by Allan Brooks, in the Auk, 1920, pages 356-365, should also be consulted.

In the spring and early summer, it was easy to identify the drakes by the purple color of their heads and their white cheek crescents. But during most of the summer and the fall, and including all of what was known as the "Park season", the drakes then in eclipse plumage had few distinguishing marks, to say nothing of the decidedly unmarked females and young (even the young drakes did not assume breeding plumage until approximately sixteen months old). It was not until October (October 14 in 1922) that the adult males resumed distinctive plumage, although it developed rather rapidly after that.

Because descriptions of the topographical and climatic features that affect Yellowstone bird life have already been given in the WILSON BULLETIN for December, 1927, and September, 1928, they are not repeated here. But it will prove advantageous to bear in mind that the Transition, Canadian, and Hudsonian Zones cover large areas in Yellowstone Park, and that the first two are generously supplied with water—ponds, lakes, and rivers. Mr. Sawyer's paper (1928) deals with the Barrow's Golden-eyes at Ice Lake. While the present author has made many studies at Ice Lake, both earlier and later than he did, Mr. Sawyer has covered so well that locality, and the whole subject of courtship there, that repetition here is carefully avoided. Mr. Sawyer's valuable article should be read with this one in order to have a complete picture of the whole.

While I really thought that these Golden-eyes preferred the larger lakes and streams, I often found them on smaller bodies of water in all parts of the Park. But I saw so many far out from shore on Yellowstone Lake, and on the Yellowstone River just below the Lake, that I learned to look upon those two locations as more representative. Still, in spring, they frequented small ponds and the open water that first gathered at the edge of the ice of larger lakes; and in summer, I found them on virtually all the well known Park waters, even on beaver ponds. They usually preferred to remain on the water; but sometimes they climbed out on a boulder to preen or sun themselves, or lined up on a sand beach or gravel bar, almost in the breaking waves, for the same purpose. In winter, they stayed on the partially frozen reservoir near Mammoth Hot Springs, on the rapid water of the Yellowstone River, along the open Gardiner River, and on other waters kept open by hot spring and geyser water.

Usually these ducks were seen one or two at a time; or, in the proper season, a family party. But on one occasion, I noted a compact flock of a hundred individuals well out on Yellowstone Lake. When in pairs, it was the female that took alarm and flushed first. A

seeming exception to this rule was a pair on the Gardiner River on April 8, 1923, when the male flew away first. But this was no doubt due to the female being still under water, and not seeing me, when I suddenly revealed myself to the male.

Although Barrow's Golden-eyes were normally ducks of the lakes and other still waters, they were well able to negotiate the swift waters of rivers. In fact, they seemed to take delight in coasting down the rapids. While doing so, they frequently allowed themselves to be washed over "falls", dropping as much as three feet, and at the bottom even going temporarily out of sight in the foam and spray without showing the slightest concern. Sometimes, I thought they intentionally flew up the Gardiner for the purpose of coasting down. Still, as they came down, they fed; and food might have been the real reason of the floating trip. At times, during the descent, these birds took advantage of an eddy, or of quiet water behind a rock, to rest and preen. Even on the much larger Yellowstone River, I noted that these Golden-eyes actually seemed to favor the roughest water. Neither were they afraid of ice. On November 14, 1922, when the anchor ice was freely running in the Yellowstone River below Alum Creek, these ducks were the only ones among a dozen species to be dodging in and out, and diving under, the floating cakes.

As a rule the Barrow's Golden-eyes in Yellowstone Park became extraordinarily tame on waters close to main highways; they even appeared entirely unconcerned when the biggest autos along the Gardiner River went thundering past within a hundred feet. But even there they regarded with suspicion an auto *that stopped*. When I approached them too closely, either on foot or on horseback, they swam away, or disappeared down the rapids, instead of flushing as soon as the nearby Mallards did. But if they were forced to flush, they only flew a short distance, and soon came back again without apparent hesitation or fear.

I do not know that these Golden-eyes had any more curiosity than other ducks, but I have seen them come swimming across Swan Lake when they caught sight of me in the bushes on shore. And I once had a similar experience at Twin Ponds, near Junction Butte, and again on the Yellowstone River at the mouth of Alum Creek. In the first instance, there were a dozen Barrow's Golden-eyes scattered over the Lake; but there was only one pair at Twin Ponds. On the other hand, the mouth of Alum Creek was alive with many individuals of several species of water-birds.

I doubt if the Barrow's Golden-eyes ever sought the society of other waterfowl, but common interests and tastes brought other species near them. For instance, I have seen individual Coots, Mallards, Green-winged Teals, Mergansers, Buffleheads, Ruddy Ducks, Redheads, Canvasbacks, Bluebills, and White Pelicans in the neighborhood of Barrow's. Occasionally in winter, American Golden-eyes and Barrow's were accidentally near each other, but more often the two species kept entirely apart. I have seen both beavers and muskrats on the same pond with Barrow's Golden-eyes, but so far as I could see, each of the different species swam along about its own business, merely careful to avoid collision with any other individual.

Nesting in hollow trees as they did, the Barrow's Golden-eyes' eggs were comparatively safe from enemies. I did not observe that any of the hawks, owls, or eagles preyed on these Golden-eyes. But all the fur-bearing mammals, smaller than the wolf, hunted them more or less, with rather indifferent success, because these ducks usually kept well out of reach. However, on one occasion (December 3, 1922), I found the remains of a drake on the shore of Gardiner River. Some animal, probably a mink, had fed on the body, but I could not determine whether it had killed the bird, itself, or had found it already dead. Or, this might have been a wounded bird, as the place was only a mile or so from permissible shooting territory outside the Park.

As a rule, the flight of these ducks was low, not more than three to four feet high. When rising from the water, their progress seemed labored at first. If the air was calm, or the wind was light, they were often compelled to kick the water for the first twenty or thirty wing strokes. Sometimes, along the Gardiner River, where the average descent of the water surface, due to the rapids, was five degrees, or less, from the horizontal, I have seen them start up the river, finding the rising too difficult, and later strike the water a resounding splash when they fell back. But if they had a strong wind blowing down the river, they rose easily against it, and might then fly at a greater height, even as much as thirty or forty feet above the water. Once, when I was going up a narrow stream, with the wind blowing *up stream*, I suddenly found a half dozen Barrow's Golden-eyes before me. They dared not fly up into my face, they could not rise at all with the wind, and the canyon we were in was too narrow and high to fly out of sideways. So they were obliged to swim down past me, no doubt closer than they liked, and then flush behind me. On broad, open waters these ducks always flew up against the wind, if at all possible, and later swung around in the direction they wished to go. In such places,

they had much less difficulty in rising, probably because there was generally some wind. Apparently, even against a breeze, these Golden-eyes could not jump up as the Mallards so frequently did. But once under way, the flight of Barrow's Golden-eyes was swift, steady, and powerful, giving rise to a peculiar whistling sound that earned them the name of "Rocky Mountain Whistlers".

While the majority of these ducks that were in the Park during the summer migrated south when their home waters began to freeze, a few remained along the Yellowstone River, the Gardiner, and some other waters. The Yellowstone was large enough, and rapid enough, so that it always remained open in places. On the other hand, the Firehole, Gibbon, Madison, Snake, and Gardiner Rivers, being much smaller, would undoubtedly have frozen if it had not been for the large quantities of thermal water discharged into them.* It seemed very wonderful that there should be enough natural hot water to keep these streams open, for the rivers named remained clear of ice, even when the temperature was far below zero. When the temperature of the air fell to near the freezing point, vapor appeared above these waters. As the degree of cold increased, this vapor became denser and denser until it was really a heavy fog for a few feet above the water, at extremely low temperatures. So far as I know, this visible vapor did not affect the Barrow's Golden-eyes in any way, but the warmer water did undoubtedly increase the food—both vegetable and animal—over what would have been available otherwise. Minute vegetation flourished as luxuriantly all winter in the warmed water as it did in summer; and in places, insects actually persisted at all times close to the warm water!

Ordinarily, these Golden-eyes did not summer along the Gardiner; but they appeared there each autumn at the time the larger ponds and lakes closed over. In 1922, the first of the season came to the water supply reservoir at Mammoth Hot Springs on October 15, and on the Gardiner River a month later on November 11. Those that wintered along the Gardiner, 1920-1921, began leaving about February 25, or about the time that the first open water appeared along the edges of ponds and lakes—the waters supplied with spring water that was somewhat warmer than the snow then beginning to melt a little during the warmest part of the day, being the earliest to open. First to leave the Gardiner that year were the males, followed one by one by the

*The Gardiner River, for instance, was usually frozen in winter above the mouth of Boiling River, where the accumulated hot waters from Mammoth Hot Springs discharged themselves into it; but it was always open below.

females and immature, until the last one left on March 2. But a cold, freezing spell brought a female back on March 7; and others returned later until there were six drakes and five females on the approximately three miles of open river water, on March 12. Then they decreased in number again, gradually. By March 24, they were abundant at the outlet of Yellowstone Lake, forty miles away and a thousand feet higher in altitude, about 7700 feet above sea level. No doubt, some of the Golden-eyes gathering at the Lake outlet came from other wintering grounds, although they had all probably spent the winter within the Park, for all were very tame. A month later, during the last week in April, some much wilder birds arrived, indicating that the flight from more southern, unprotected waters, had begun.

Usually, Barrow's Golden-eyes fed by diving, even going far under the ice of partly closed ponds and streams, and later returning unerringly to the open portions when they wished to regain the air. While feeding on the bottom, these ducks kept their bodies comparatively motionless while their heads and necks swung from side to side below them in their search. At least once, I found a swimming female feeding along the Gardiner in shallow water by thrusting her head under; but on getting into deeper water, she stopped feeding, and did not attempt to "tip" as Mallards do.

These Golden-eyes bathed by rising in the water until almost standing on the surface, scooping the water up with bowed wings and throwing it forward and over them. After from five to fifteen of these "showers", they plunged head and neck under, shooting forward and shaking themselves at the same time so that a thin film of water ran over the shoulders and down the back. Generally, they preened while on the water, if not too rough, turning far over on one side or the other to get at those parts of their plumage that were ordinarily under water. In windy weather, or when the surface was rough, they gathered in protected bays and coves, or on smaller ponds and streams, to do their bathing and preening.

During the first part of the winter, the females along the Gardiner River outnumbered the drakes—three to one. While I did not learn where they came from, more and more drakes arrived as spring approached, and the two sexes gradually became more nearly equal. By the first of February there was a marked tendency to pair off, courtship beginning at this time and lasting until June in some cases. Almost all flocks were broken up by April, even on the ponds and small lakes where the birds now were. On waters other than Ice Lake, I found the courting differing in small particulars from the procedure

as given by Mr. Sawyer (1928). While the drakes always did most of the "chasing" and the "dancing", the females usually responded, often bobbing rapidly up and down so as to send a widening series of circular waves chasing each other across the water. Sometimes, I saw a male swim jerkily along, not necessarily toward the female, with an occasional extra effort raising his breast high above the water, and at the same time the bill pointing upward, and opening and shutting twice. Then the head was drawn far back until it rested on the lower back. After remaining there a moment, the head was returned to normal; and the drake that had been swimming forward all the time kicked backward and upward, a little spurt of water. Often a male pursued a female with *his* head and neck extended out in front just above the surface and parallel with it. Of course some of these variations may have been due to individualism as Mr. Sawyer also pointed out.

The breeding range of this species is usually given as the far north, without recognition of the extensive breeding range extending south along the Rocky Mountain backbone as far as Colorado. Although the fourth edition of the A. O. U. Check-List does not mention Wyoming at all, the Barrow's Golden-eye was actually the most abundant breeding duck, with the possible exception of the Mallard, in the Park.

Here the Barrow's Golden-eyes made their nests and laid from eight to twelve eggs in May, at the lowest elevations in the Transition Zone, as at Ice Lake at about 5700 feet altitude. But most of the resident Golden-eyes nested in the Canadian Zone, where the first eggs were laid in early June; and there were even a few sites in the Hudsonian Zone above 8500 feet elevation where eggs were still a little later. All nests that I found were in hollow trees, either standing on the shore, or within a hundred feet, of lakes, small natural ponds, beaver ponds, or streams. So far as I know, the females did all the brooding. After hatching, the mothers took entire care of the young while the males spent their time elsewhere, recovering from the molt. Some of the broods were large enough to fly by the end of July, as was the case at Twin Lakes, near Norris Geyser Basin. On the other hand, I once found a backward brood of partly grown ducklings following their mother across a backwater near Yellowstone Lake on August 8.

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While I have not named any article from it in the above list, there is an important mimeographed serial, issued by the National Park Service in Yellowstone Park, from six to twelve times a year, called the "Yellowstone Nature Notes". These Nature Notes contain many valuable references to all birds of the Park, but it is rather hard to refer to them, because it is quite difficult to locate a complete file.

Long Beach, California.

WHY BIRD SONG CAN NOT BE DESCRIBED ADEQUATELY

BY ALBERT R. BRAND

Almost as soon as a bird student delves into the subject of song, he discovers that it is extremely difficult—in many cases impossible—adequately to describe song. Of course the limitations of language are such that many songs are impossible of description; whistling can be attempted in a few cases, but we have no method of transcribing whistling to paper; musical notations are almost useless. There are only a few songs that lend themselves to this type of transcription. Onomatopoetic words or phrases definitely help in a limited number of cases; the Whip-poor-will does seem to say those words. But in the vast majority of cases it is absolutely impossible to describe or write down what the bird sound is so that it can be intelligible to any person except, perhaps, the writer himself.

Why this is, seems difficult to determine. Bird songs, in many cases, are quite constant. We can recognize them every time we hear them, yet we cannot describe them. Examples of constant songs, cases where each male of the species sings a song very like other males of the same species, are numerous. The songs of many of the flycatchers and some of the warblers are examples. The songs of such species as the Phoebe, Alder, Yellow-bellied, and Olive-sided Flycatchers, are very similar in most birds of the species; and the songs of the Black-throated Green and the Mourning Warblers, and the commoner song of the Chestnut-sided Warbler are essentially alike—each species' member's songs, much like his brother's—yet they can not be intelligibly described.

Of course, there is the method of using catch phrases, "Poor Sam Peabody Peabody Peabody", for the White-throat's song, "Cheerily cheer up cheer up", for the Robin, "Sweet-sweet-sweet-I'll-switch you" or "Very very pleased to meet you", for the Chestnut-sided; but no one claims that these are adequate descriptions. They are aids in practical identification, and as such are useful; that is all.

If, however, we attack the problem from a slightly different angle, we may understand why adequate description is really impossible. It is not a question of what sound is made, but what is heard. Hearing differs, in all probability quite markedly, from person to person. In the range of ordinary sound, these individual differences are rarely noticed; but in bird sound the range of frequency is quite different from other common sounds. The average fundamental frequency of most bird song is about 4000 double vibrations, approximately the

highest note of the piano keyboard; and many bird sounds are pitched in the octave between 4000 and 8000 double vibrations. Practically no other sounds of everyday life are pitched as high as bird song; certainly nothing musical or melodious approaches this range.

Individual hearing differs from person to person, and especially is this true as the pitch of the sound rises. In a recent experiment at Cornell University the hearing of some sixty persons, ranging in age from fourteen to sixty-six, was tested, in an attempt to discover how high they could hear. Most of the subjects were between the ages of eighteen and twenty-five. The results were similar to those usual in such tests. The younger people heard better; they perceived higher vibrations than did persons in middle life or later. The curve was quite normal; but what impressed the writer, who personally made a number of the tests, was that there were spots of apparent fading in a great number of the subjects: and these fading areas were not necessarily at a very high pitch; sometimes they occurred as low as 4000 double vibrations; at other times, at 6000, 12,000, or 15,000; sometimes a person who could hear quite clearly the highest pitch to which the oscillator was tuned, 17,000 double vibrations, had two or three fading areas, some of them, an octave or two below the high. Occasionally a person could not hear, at all 12,000 or 15,000, yet heard 17,000 perfectly well.

The variations in the fading point of the subjects were many and seemed to follow no obvious rules. They were noted in the higher ranges, at or above 4000 double vibrations. They might occur anywhere from 4000 to 17,000. Now within this range are many of the bird songs that are difficult to describe.

It is apparent that individual variation in hearing is very great: in addition, hearing and psychology are very closely allied; practically always there enters into hearing the psychological factor. We hear what we are listening for, and what we expect to hear. We can not, try as we will, hear objectively; it is impossible to separate the hearing apparatus from the thinking mechanism—the ear, from the brain. Hearing is a decidedly subjective function. Then if we remember that probably in no two people is hearing exactly the same, we will readily conclude that this, the subjectivity of hearing, is the reason why no two persons describe bird songs in exactly the same way. They do not hear them in exactly the same way; it would be absurd to expect them to describe them similarly.

A few examples of these subjective interpretations of bird song will serve to make the point clear. To the writer, the songs of the

Alder Flycatcher and the Phoebe are quite similar. The former has a three-note song; the latter a two; but the quality, to my ear, of both songs is very similar; in fact, one of our earliest film recordings of bird songs was made of an Alder Flycatcher which was mistaken for a Phoebe with a slightly peculiar three-note song. Not until the film had been processed and played back was it realized that the Alder Flycatcher and not the Phoebe had been recorded. Today, I never hear an Alder without being reminded of a Phoebe; probably my earlier confusion of the two songs has an unconscious effect upon my perception; be that as it may, I see a striking resemblance between these two songs. On the other hand, the three-note song of the Olive-sided Flycatcher, syllabized by Hoyes Lloyd as "Tuck three beers", has nothing in common with the Alder Flycatcher's song, so far as I can see. Its quality is different and distinct. The Olive-sided's song is shrill and clear; the Alder's is buzzy; its feature is a furry quality, a hoarseness suggestive of the Phoebe; at least that is my interpretation; yet Dr. Arthur A. Allen tells me that the Olive-sided's song and that of the Alder, to him, are quite similar. I cannot see the similarity in the least; yet I am forced to conclude that we are both right! The Olive-sided and Alder do sound alike—to one with Dr. Allen's hearing and thinking apparatus; the Alder's and Phoebe's notes are similar to a person with my make-up; to one with Dr. Allen's, they are quite dissimilar.

Numerous examples could be cited; to some careful observers' ears the notes of the Wood Pewee and Yellow-bellied Flycatcher are quite confusing; to others, they are not at all similar. There is no question here of inaccurate or careless observation; it is patently a case of difference in interpretation.

While playing a phonograph record of the song of the Western Meadowlark for Dr. James P. Chapin—a song that Dr. Chapin had never heard in life—his reaction was that here was a song that showed the relationship of the Meadowlarks to the Icterids. In the Eastern bird, he had never noted the peculiar strain. When he called this to my attention, I imagined or believed I saw this family resemblance in the Western Meadowlark's song, but it certainly was not the most important or characteristic feature of the song.

One of the values of bird sound photography—the recording of bird song on film—on the phonograph records made from such pho-

tography, is that it reproduces the song essentially as it is heard. The reproduction is not, in all cases, perfect; certain mechanical difficulties in reproduction, especially in the high frequencies, are often present. Even if a perfect piece of film is produced, getting the sound off requires a machine of excellent quality, able to reproduce frequencies of extreme height. Few machines in motion picture houses do not lose accuracy at 7000 double vibrations and even lower. In phonograph reproduction the same difficulty is met but it is more pronounced. Even the best commercial phonographs are not strictly accurate above about 5000 double vibrations. But even accounting for these discrepancies, the mechanical reproduction of photographed bird song has the advantage that it reproduces with more or less fidelity, what is heard by the human ear. We hear about what we would in the field; and it is interesting to note that the subjective reaction of the listener is much the same as in the open. Thus when they are mechanically reproduced, Dr. Allen hears in the songs of the Olive-sided and Alder Flycatchers the same similarities that he notes as peculiar in the field; while to me, the Phoebe's and Alder Flycatcher's songs, when reproduced in the laboratory, do not differ materially, and I note the same resemblances that always appear when I hear the birds in life.

In conclusion, I wish to advance the thought that probably the reason for the innumerable different and conflicting descriptions of the same song with which the literature of ornithology is replete, is, that rarely do two observers hear the same song in exactly the same way. The song is not noticeably different when produced by varying members of the species, but by the time the sound waves have affected the listener's hearing apparatus, and have been transferred by the nerves to the brain, and interpreted by that organ, it has created an entirely different sensation and impression on each individual listener. The cause of these differences is the differing receiving apparatus and psychological make-up of each individual listener. Bird song interpretation is a subjective phenomenon; interpreting what is heard can only be done subjectively.

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FURTHER NOTES ON A VERY OLD CARDINAL

BY ALBERT F. GANIER

In previous issues of this journal (December, 1933, December, 1934, and December, 1935) I have given the history of a male Cardinal, banded by me at my home on February 12, 1924. I am glad to be able to say that at this writing (November 10, 1936) the bird is still living and is therefore more than thirteen years old. So far as I am able to learn, it is the oldest known small wild bird.

It will be recalled that the winter of 1935-36 produced some of the coldest weather on record including subzero temperatures here, and that the drouth of the past summer was particularly severe, yet this bird came through in good condition. There are unmistakable evidences of age however. When feeding at his shelf he does not stand erect with head held high as do the younger Cardinals. Instead, he crouches or even sits down while eating. His head is held resting on his shoulders so constantly that when the neck is occasionally straightened, the feathers do not fall to cover the gap and a bare section of neck is exposed. Molting has become slow and tedious; at this writing there is still a ragged appearance on the upper breast. During the drouth he was much troubled with mites until I trapped him and dusted his feathers with insect powder. After the nesting season this year his pugnacity has been entirely lacking. The song of spring and summer was regular though somewhat subdued.

In the last instalment, I recorded that this male mated with a young female early in April, 1935, on the day after his former mate was killed. The two remained mated through that year and through the present season. The pair remained together all during the winter of 1935-36, roosting on branches under the eaves of the garage and visiting the feeding shelf together for their breakfast each morning. With the first signs of spring in February, the male demonstrated the awakening of a devotion for his mate by feeding her at the shelf. This has occurred each year at this season. Their first nest was begun on March 28 in a bush-honeysuckle shrub, thirty feet from the house, and on April 18, the female began sitting on three eggs. These were immediately taken, presumably by a grackle. (The shrub at the south window, which has held the male's first nest for many years, was not chosen this year, possibly because another pair of Cardinals were prospecting the site at the time). The second nest was built six feet up in a lilac shrub close to the dining room window. It was begun on April 20 and finished in a week. Incubation, always by the

female, began on May 1 and on the 15th the nest was seen to hold three small young. A high wire guard was placed around the shrub but on the night of May 19, a cat climbed this, pulled the nest over and ate the young. At 8 A. M. the female was seen to fly to the wrecked nest with a large green worm, not yet able to realize the young were gone.

Ten days later the male was observed to be particularly attentive to his mate, feeding her constantly from the grain on the shelf. The long drouth, which dated from April 9, was already making itself felt however and, apparently sensing its continuance, no new nest was begun. The drouth broke on July 2 with copious rains but a nest had been finished a few days before and the female had begun incubation on July 1, on three eggs. This nest was built eight feet up near the top of a privet, against the house next door. Here success finally crowned their efforts and three healthy youngsters left the nest late in the afternoon of July 20. Two of the young were taken in charge by the female and one by the old male. The former were constantly about the premises until the young had fully reached maturity when they supposedly joined a wandering flock of a dozen birds. The old male and his charge soon left the premises and were absent through most of August and September though showing up occasionally. On August 3, a male Towhee whipped him off the shelf, whereon he had regularly breakfasted for years, and from that day to this he has not been seen to return to it. He has taken up quarters in shrubbery at the opposite end of the house, adopted a new feeding shelf there, lost the youngster he raised and became a hermit. He pays no attention to his mate of the past two years. She feeds regularly at the old stand but also keeps to herself and it remains to be seen whether the companionship of last winter will be resumed when the leaves are gone. The constant care and feeding of the late hatched and perhaps wayward fledgling seems to have thrown the old male entirely off his former manner of living.

ADDENDUM. (February 15, 1937). I regret to add that the old Cardinal has not been seen since November 20. And while it is possible that he may have established quarters elsewhere, it is more probable that, having become senile and inactive, death has befallen him. Should he return I will report in this journal. The female continues her daily breakfast at the old shelf, usually accompanied by her new mate.—A. F. G.

NASHVILLE, TENN.

A WILSON MEMORIAL

BY BAYARD H. CHRISTY

A receipt-book kept by Alexander Wilson preserves the record of work done on plates for the "American Ornithology"—engraved plates, colored by hand. The book was an item of a collection of Wilson memorials displayed at Pittsburgh, in connection with the meeting there of the Wilson Ornithological Club in December, 1935. It came from the Thayer Collection and was courteously loaned by the Museum of Comparative Zoölogy, in Cambridge, Massachusetts.

It is a humble record—a slender book in faded, marbled-board covers, five inches by seven and a quarter in size, containing six leaves, twelve pages. The earliest entry is one of January 9, 1810; the latest, February 16, 1811. The thirteen months that intervened between those dates were the most notable in the story of Wilson's *magnum opus*. When, early in 1810, the second volume had appeared, the enterprise was still in equivocal case: the element of doubt was large, whether the purpose and hope of this amateur carried with them substance such as to become value received in the hands of an adequate number of subscribers. But in the round of the following year Wilson extended somewhat the list of his subscribers, enlarged in much greater measure the store of his data, brought to completion his third volume, and gained for the undertaking in its commercial aspect a very much wider and surer recognition. Thereafter the story is one of the plodding heavy work of actual performance.

The receipts that this book contains are written in Wilson's hand and are severally signed by the payees. There are thirty-seven receipts, given by ten persons, for the aggregate amount of $1,657.35½. Here (September 3, 1810) appears Alexander Lawson's vigorous signature, set down in acknowledgment of $229, payment "in full for engraving the four first plates of Vol. Third of American Ornithology"; here (February 6, 1811) appears George Murray's acknowledgment of the receipt of $25, for "etching and work done on the Carolina Parrot". (The Carolina Parrot plate is the eighth of the nine plates of the third volume). In a letter written six days later (Grossart, LXXXVI) Wilson said, "I have now no farther dependence on Murray; and I mean to make it consistent both with the fame, and the interest, of Lawson to do his best for me."

Here are receipts given by Joseph Brown, for printing in all 5,838 prints, chiefly from the nine plates of volume three; and here are the receipts given by the artists for coloring 4,868 of these prints. The engraving of a plate cost Wilson from $50 to $60; the printing,

1.6 cents a print; and the coloring, 25 cents a print. The seven colorists whose names appear are Alexander Rider, John H. Beck, E. Leslie, Anna C. Peale, John H. Hopkins, Louise Adelersterren, and Prosper Martin.

Alexander Rider was, according to Miss Lavinia Lawson (a daughter of the engraver), "the artist who undertook the coloring of Wilson's first edition"; he was, she says, "a Swiss painter in oils."[1] Dunlap thought he was a German, from Würtemberg[2]; but Mr. Frank L. Burns, who is well qualified to speak, seems to think that Miss Lawson

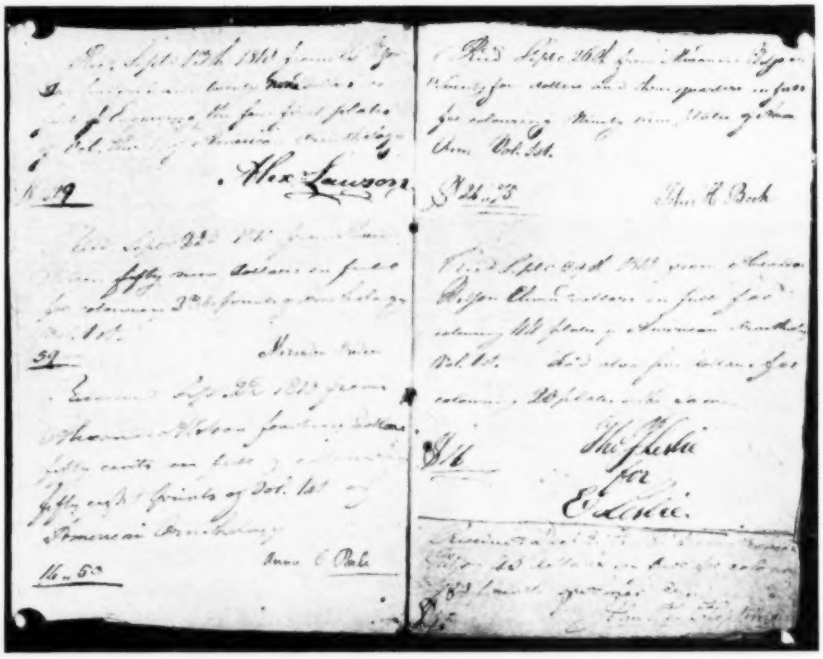

Fig. 1. A page from Wilson's Receipt Book.

was right.[3] Mr. Burns says of Rider that "he appears to have been the only professional 'fancy painter' of that time in Philadelphia"; he alludes to Miss Lawson's characterization of Rider's work—"he understood water colors however, but to facilitate his work, spoiled a great many copies by using opaque colors both in Wilson's and afterwards in Bonaparte's works"[4]; and he quotes Bonaparte who "in an outburst of impatience wrote Lawson: 'That confounded Rider has enraged us

[1]Burns, "Miss Lawson's Recollections", Auk, July, 1917; XXXIV, p. 279.
[2]Dunlap, "History of the Arts of Design in the United States", Bayley & Goodspeed ed. 1918, II, p. 392.

to a pretty considerable extent. Look at volume first [of Bonaparte], all the red and orange tints have been obliterated! Shame on him for employing such colors!' " Mr. Burns says, "The work of Alexander Rider probably occurs more or less in every volume" of Wilson. Dunlap's further notation, that Rider "made miniatures and historical compositions in Philadelphia between 1818 and 1825",[5] is, of course, to be accepted.

Eliza Leslie (1787-1858), author, daughter of Robert and Lydia (Baker) Leslie, was an elder sister of Charles Robert Leslie, the artist, and of Thomas Jefferson Leslie, the soldier.[6] She was a contributor to "Godey's Ladies Book", and editor of "The Gift". Her writings have to do chiefly with housekeeping subjects. Her brother Charles Robert (1794-1859) also was one of Wilson's assistants. Born in England, he returned to that country and became a painter of note and a Royal Academician. In his Recollections,[7] written about 1850 and published after his death, Leslie said, "Mr. Bradford, the same liberal patron who enabled me to study painting, enabled Wilson to publish the most interesting account of birds, and to illustrate it with the best representations of their forms and colours, that has ever appeared. . . . I assisted him to colour some of its first plates. We worked from birds which he had shot and stuffed, and I well remember the extreme accuracy of his drawings, and how carefully he had counted the number of scales on the tiny legs and feet of his subject." Wilson's bodily appearance then is swiftly characterized—"He looked like a bird; his eyes were piercing, dark, and luminous, and his nose shaped like a beak. He was of a spare bony form, very erect in his carriage, inclining to be tall; and with a light elastic step, he seemed perfectly qualified by nature for his extraordinary pedestrian achievements."

Anna Claypoole Peale (1791-1878), daughter of James, and niece of Charles Willson Peale, the artist and proprietor of Peale's Museum, became herself an artist of some distinction and a miniature-painter. She was the wife, first, of the Rev. Dr. William Staughton, and, second, of Gen. William Duncan.[8]

John H. Hopkins (1792-1868), then an unknown young man, was destined to become a clergyman, rector of Trinity Church in Pitts-

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[3]Burns, "Mechanical Execution of Wilson's American Ornithology", Wils. Bull., March, 1929, XLI, p. 21.

[4]Auk, 1917, XXXIV, p. 279.

[5]Dunlap, *op. cit.* III, p. 330.

[6]Her portrait may be found in Appleton's Cyclopaedia of American Biography.

[7]Leslie, "Autobiographical Recollections" (with portrait), Boston, 1860, p. 163.

[8]Dunlap, *op. cit.* III, p. 322; Appleton's Cyclop. Amer. Biog.

burgh, and eventually the first Protestant Episcopal bishop of Vermont. Of this episode in his career Bishop Hopkins's son has written (somewhat condescendingly):[9] "A more congenial sort of drudgery was soon thrown in his way. Wilson the ornithologist had begun the publication of his *Birds of America;* but, in the infancy of the arts among us at that time, he was unable to find any one competent to color the splendid plates of that great work from Nature. My Father was at length induced to attempt it. The price paid was lucrative, to him: and his proficiency in the art of painting, his delicacy and accuracy of both eye and hand in observing and imitating the hues and the forms of Nature, ensured him a degree of success which delighted his employer, besides being for a time, very agreeable to himself. [In a footnote the eulogist adds, In water-colors, he had, at that day, no superior in this country; and his love for his art, as for music, continued unabated during his whole life.] Mr. Wilson always shot a fresh bird for his colorist, so that there should be no chance of the fading or changing of the brilliant tints of life. But constant repetition at length brought weariness, where the work had been begun with so much of zest and conscious self-improvement: and when other assistants had been sufficiently well trained, the task-work was willingly transferred to humbler hands."

Of neither John H. Beck, Louise Adelersterren, nor Prosper Martin has any certain knowledge been gained. Dunlap mentions an artist named Beck[10]; but he became a teacher in Lexington, Kentucky, and died in 1814; so he can hardly have been in 1810 Wilson's colorist. Louise Adelersterren, with her German name, may, as a guess, have been a protégée of Rider's.

The further story of the task of getting out an edition of several hundred copies with their laboriously colored plates is told by Ord in his "Life of Wilson":[11] "Independently on that part of his work which was Mr. Wilson's particular province, viz., the drawing of his subjects and their histories, he was necessitated to occupy much of his time in coloring the plates: his sole resource for support being in that employment, as his duties as assistant editor of the Cyclopædia had ceased. This is a circumstance much to be regretted, as the work would have progressed more rapidly if he could have avoided that confining drudgery. The principal difficulty, in effect, attending this work, and that which caused its author most uneasiness, was the coloring of the

[9]Hopkins, "The Life of the Late Right Reverend John Henry Hopkins" (with portrait), 1873.

[10]Dunlap, *op. cit.* II, 382.

[11]American Ornithology, 9, XLIV.

plates. If this could have been done solely by himself; or, as he was obliged to seek assistance in this delicate process, if it could have been performed immediately under his eye, he would have been relieved of much anxiety; and would have better maintained a due equanimity; his mind being daily ruffled by the negligence of his assistants; who too often, through a deplorable want of skill and taste, made disgusting caricatures of what were intended to be modest imitations of simple nature. Hence much of his precious time was spent in the irksome employment of inspecting and correcting the imperfections of others."

In a letter to the Editor of the WILSON BULLETIN for September, 1928 (XL, 208), the present writer intimated that William Bradford, Wilson's publisher, maintained "a shop of colorists". From what has now been set down it is manifest that he spoke with too great assurance and to erroneous effect. In this he afterward was very properly corrected by Mr. Burns (WILSON BULLETIN, March, 1929; XLI, 20).

Surely this receipt-book and the associations that cluster about it go far to restore, to create before the mind's eye, a picture of the episode—a major episode in the story of Wilson's life. And as we contemplate that picture, our sympathy must be quickened, and our appreciation deepened of the accomplishment of this inspired schoolmaster.

SEWICKLEY, PENNSYLVANIA.

SNOW-KILLING OF THE BOB-WHITE

BY THOS. G. SCOTT*

Reports of ground-roosting birds imprisoned by snow or sleet may be found in various ornithological publications, and occasionally popular articles with illustrations appear relating to birds killed by exposure to the weather. However, convincing evidence that snow imprisonment occurs and actually results in death to the prisoners is scarce.

The data included in this paper may provide conclusive evidence that, at least in one instance, reasonably strong Bob-whites (*Colinus virginianus virginianus*) were imprisoned and killed by drifting snow. In addition, it will be pointed out that other birds of the same covey met death by exposure to severe weather in spite of apparent physical fitness and the protection of normally acceptable cover.

The notes supporting this paper were incidental to observations upon emergency feeding practices. However, the notes are detailed

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enough to be significant and are adequately warranted by photographs. The writer is indebted to Dr. H. H. Knight of Iowa State College for the accompanying photographs.

The covey of Bob-whites under observation was located on the Little Wall Area by Mr. Robert I. Simpson and the writer during a preliminary survey to prospective emergency feeding operations. This inspection was carried out on the twenty-eighth day of January. The birds were using a plum (*Prunus*) and willow (*Salix*) thicket as a day roost. The thicket was growing upon a slight embankment immediately to the northwest of a marsh which in that region is largely grown up to river bulrushes (*Scirpus fluviatilis*). The embankment and thicket provided excellent mechanical protection from the prevailing northwest winds, and the skyward branching of the thicket insured the birds against the attacks of winged predators. At that time there were approximately twenty-one birds in the covey. It may be of interest to note that both Bob-whites and Pheasants (*Phasianus colchicus torquatus*), in apparent tolerance of each other, were using this thicket almost to the exclusion of one or two available willow thickets which were, if possible, more exposed to the wind. The birds were not fed during this visit, but later, on February 2, shelled corn was placed in the thicket by emergency feeders.

On February 8 the most severe blizzard of the season occurred. The writer, interested in its effect upon wildlife, drove to the Little Wall Area to observe the birds already mentioned. Under protected

FIG. 2. The thicket. The snow-prison was at the writer's feet, and the highest level of the drift is being indicated upon the willow clump.

FIG. 3. This shows the night-roost group and the approximate positions of the single birds collected on the same day.

FIG. 4. A close up of the night-roost group. The singles, probable victims of exposure, have been placed near the night-roost group for comparative reasons.

conditions the temperature was 15° below zero, but it was probably ten to fifteen degrees lower in the face of the thirty to forty mile an hour gale which was blowing. Although but three inches of snow fell during the day, there was enough of it in the wind to make visibility very low and to cause extensive drifting. The visit was made at 10 A. M., and at that time the snow was drifting rapidly. The Bob-whites and Pheasants were both at the thicket, but the cover was proving inadequate to the test. A part of the Bob-whites were in a night-roost formation, and the others were scattered throughout the cover. Iced snow was seen upon the head and upper neck of a few Pheasants and Bob-whites. Two of the Bob-whites, weakened by the weather and encumbered by an incasement of snow and ice upon their heads, were noticeably helpless. Without difficulty these birds were collected by hand, and the others flew into the bulrushes. The eyes and nostrils of the captured birds were sealed with iced snow, but the mouth was clogged with neither ice nor snow. Although helpless and decidedly subject to predation in the face of the blizzard, these birds revived hurriedly once within the car. The car was unheated, hence served only to break the wind. The wind undoubtedly carries snow to the head of a bird, but, what is more important, keeps it there. As the roads were rapidly becoming impassable, the writer was forced to leave the field.

It was impossible to return to the area for three days. On February 11 the roads were again passable, and a trip was made to the thicket to view the results. Upon approaching the thicket, one live bird was seen to make a reasonably strong flight away from the opposite side. The cover was drifted with from four to eight feet of snow, and there was but little sign indicating that live birds were using it. After a short search, one dead bird was found with its head projecting above the snow. It was facing into the blizzard, as were all Bob-whites found dead through exposure in this covert. The drift was too extensive to attempt shoveling to the birds which were possibly somewhere within, so an intensive watch was kept upon the drift as soon as melting began on February 23.

The notes concerning each member of the covey accounted for may possibly be handled to the best advantage as follows:

Bob-white I—Male; taken alive February 8; weight 176.2 grams.
Bob-white II—Male; taken alive February 8; weight 194.2 grams.

Note: Bob-whites I and II were the specimens taken during the blizzard. Although the weights indicate reasonably healthy birds

(Errington 1931a), they were extremely susceptible to predation and would undoubtedly have died from exposure. These birds were kept in captivity at the college, and their weights were taken again on March 6. Bob-white I—181.5 grams. Bob-white II—197 grams.

Bob-white III—Male; found dead February 11; weight 185 grams. The crop of this bird was empty, but the stomach contained corn. The weight again indicates a reasonably strong bird.

Bob-white IV—The lone living bird seen three days after the blizzard. Its flight was strong and vigorous.

Bob-white V—Female; found dead March 8; weight 135 grams. This was one of the first birds to appear after the melting began on February 23. It was found approximately four feet below the highest level of the drift. The snow was pushed or melted back from the body of the bird on all sides for about four inches, thus forming a small compartment and indicating that the bird may have lived beneath the snow for a short time.

Bob-white VI—Male; found dead March 8; weight ? It was not considered of any particular value to weigh the bird in that its head was gone. The breast contour and stomach analysis would indicate a bird of about 180 grams. Later the head was found a few inches lower in the snow leaving evidence that the attack had occurred during the blizzard. Circumstantial findings indicated that the predator was a mink (*Mustela vision vision*).

Bob-white VII—Male; found dead March 15; weight 175 grams.
Bob-white VIII—Male; found dead March 15; weight 182 grams.
Bob-white IX—Male; found dead March 15; weight 118 grams.

Note: Bob-whites VII, VIII, and IX are the birds pictured in Fig. 4, just back of the covey group. The weights of VII and VIII would signify strong birds. From the fresh appearance, lack of snow compartment and findings by stomach analysis it is quite likely that they perished from exposure. The weight of IX indicates a very weak bird. A snow compartment was not seen about the bird, but that may have been due to untimely observation. The low weight and stomach analysis would indicate death through trapping beneath the snow.

Bob-white X—Male; found dead March 15; weight 104 grams.
Bob-white XI—Male; found dead March 15; weight 96 grams.
Bob-white XII—Female; found dead March 15; weight 120 grams.
Bob-white XIII—Male; found dead March 15; weight 116 grams.

Note: Bob-whites X, XI, XII, and XIII are the birds composing the night-roost group in Fig. 3 and Fig. 4. These birds quite obviously met death through imprisonment. The difference in outward

appearance may readily be seen by comparison with the three birds in the background. Notice the droppings and the steamed or drenched appearance of the birds in the night-roost group. The body weights are all below that which commonly deeds a Bob-white the right to live in the wild. The stomach analysis tends to clinch the argument that the birds perished through imprisonment. It is interesting to note that Bob-white XIII was heavily infested with lice (*Goniodes ortygis* Den.). Imagination might conceive of these lice moving from the dead or dying birds to XIII as the last living bird.

STOMACH ANALYSIS

Bob-white	Color of Stomach Lining	Weight of Stomach (full)	Weight of Stomach (empty)	Weight of Grit	Weight of Food and Other Remaining Material	Body Weights
V	Dark green	7	4.83	1.25	.92	135
VI	Green	8.35	5.2	1.27	1.88	†
VII	Green	9	5.8	1.15	2.05	175
VIII	Green	7.1	4.87	1.01	1.22	182
IX	Black	6.55	4.72	1.00	.83	118
X*	Black	5.2	3.85	.75	.60	104
XI*	Black	5.15	3.78	.64	.73	96
XII*	Black	6.03	4.21	.97	.85	120
XIII*	Black	5.5	4.30	.79	.41	116

†See Bob-white V note.
*Night-roost group.

The quantitative stomach analysis denotes that the imprisoned Bob-whites of the night-roost group died in much poorer condition than did those birds which died from exposure. Birds V and IX, for which former circumstantial evidence implied death by imprisonment, also show a tendency to be poorer than the exposed birds, but still not so poor as the night-roost group. Color of the stomach lining may or may not be of importance, however, the darker colors seem to be associated with the imprisoned birds. The comparatively small amount of grit found in the stomachs of the night-roost group and the lack of food provides evidence to the fact that they must have remained alive in their snow-prison for some time. The birds in the night-roost group probably died from a combination of starvation and suffocation. The exposed birds presumably died from a combination of suffocation and cold.

Nine of the original covey are unaccounted for, but this is not an entirely unusual happening. Frequently entire coveys of birds disappear from their chosen coverts only to be found by diligent searching in open corn fields many yards away. (Errington, 1936). Perhaps this entire covey would have done the same thing had not

part of them been unable to leave due to death or imprisonment. The accounted-for birds may have moved into the bulrushes where the drifting was less severe and without the characteristic crust found where the wind was able to play upon the surface of the snow. The Pheasants did this very thing and came through well except for those birds which remained too near the embankment. The embankment provided a break for drifting, and the wind froze a crust over it for some yards out into the marsh. One male Pheasant was seen to break its way up through this crust and escape after three days of imprisonment. The crust at this point was strong enough to support a man's weight.

Although drifting and undue cold is an infrequent occurrence, it appears worthy of the game manager's attention, especially in the provision and strengthening of cover. Cover which encourages drifting may be perfectly acceptable during the greater part of the year, but it certainly fails in the face of the final test. The primary purpose of good cover is that of offering protection from predators. Cover, drifted full of snow, fails in this respect and often becomes a trap to birds trusting in its protection. Future research into management practices should include the effect of drifting upon normally acceptable cover and the possibility of controlling it.

A great many ideas for controlling the drift may enter one's mind. But are they practicable, and if so, are they inexpensive and simple enough to be practiced by the ordinary landowner?

Summary

1. Reasonably healthy Bob-whites may perish through imprisonment by drifting snow.

2. Exposure to cold, high winds and snow may kill reasonably healthy Bob-whites.

3. Cover, subject to heavy drifting, is not ideal.

4. Research into management practices should include work upon the effect and control of drifting snow.

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HABITS OF WISCONSIN PHEASANTS

BY GILBERT GIGSTEAD

The annual taking of 5,000,000 pheasants in the United States, indicates truly that the bird has triumphantly affixed itself to our hunting program. Sportsmen have eagerly accepted the exotic creature, not, to be sure, because of any superior sporting quality in comparison to our native species, but because it meets the modern demand for quick, satisfactory service.

Apparently free from many diseases, immune from severe cyclic disturbances and prolific in captivity, the pheasant can be stocked in almost unlimited numbers. Once established in a locality, it is, unlike our native grouse and quail, difficult to clean out. Should they be destroyed in a given cover, simple methods of restocking will bring them back again in equal numbers within a short time. Conspicuous too, is their hardiness in withstanding severe winter weather. There is no doubt that the pheasant will dominate in territory suitable to them.

Pheasants have been widely planted in Wisconsin. For the past six years extensive releases have been made, and every county has been given at least a seed stock. It can safely be stated that some survive in every county. In the extreme north if planting operations cease, the bird may disappear, but the southern portions will undoubtedly retain fair numbers. During the past years the State Conservation Department distributed annually 30,000 birds and 100,000 eggs to coöperating farmers and sportsmen besides large numbers liberated by shooting preserve operators and other individuals. It is estimated that approximately 250,000 pheasants have been planted in this state.

During the six-day open season at least 200,000 pheasants are added to the hunters' kill, not including the birds taken on private shooting preserves. Despite this heavy toll his oriental cackle is commonly heard from the marshes where formerly the Prairie Chicken sought shelter. Defying civilization, the hardy foreigner has moved into the highly agricultural districts. With brilliant display of feathers he struts boldly across the most traveled highways. Even in the dense cedar swamps and muskeg openings of northern Wisconsin it is not uncommon to have a pheasant bluster out from underfoot.

The farming sections of southeastern Wisconsin, with its many grass and brush marshes interspersed between cultivated fields, offers the most desirable habitat. Here, also is found excellent cover in the

growth of flag and sedges along the shores. Cover of this kind, joined by grain fields, is hard to beat. Good pheasant country is also found in the south-central portions, and for a width of two counties along Lake Michigan as far north as Green Bay. In the hilly western portion conditions for pheasants are less favorable. Here, cover is limited to the river bottoms, and to the brush and grass which grows up along the banks of streams in the valleys.

The northern half of the state, having a limited number of farms and much second-growth timber, has little chance for a heavy population of pheasants. In central Wisconsin it is primarily a matter of maintaining food patches. More than 400,000 acres of this brush land may possibly be established as a game management area and public shooting grounds. Sportsmen in Wisconsin still have hopes that this worthwhile project will materialize.

As the pheasant is primarily dependent upon farming environment, much attention should be given to its relation to the farm and to the farmer. In order to determine this, and be in a position to answer intelligently the question of how much damage the pheasant inflicts upon domestic crops, the Wisconsin Conservation Department investigated numerous complaints and through the coöperation of licensed shooting preserves examined the crop contents of 141 pheasants during a five-month period, from October, 1935 to February, 1936.

Farmers in several localities reported pheasants doing damage to corn fields and vegetable gardens. The writer made many trips afield to trace the direct source of such complaints. In most complaints over damage to corn during the planting season there were found to be other reasons why the corn did not come up. One farmer had planted corn in light loam soil, characteristic of marshlands. During a heavy rainstorm the sprouting corn was exposed by washing. Blackbirds and gophers found it easily accessible. Pheasants did take some; still, there were five gophers to every pheasant. They would fill their cheek pouches, run into their holes and return shortly for more. The farmer had little interest in controlling the gophers and blackbirds which had taken at least 90 per cent of his washed grain.

Another farmer finding a dozen rows of corn dug out near his timber tract, immediately blamed the pheasants. Investigating this early in the morning for three consecutive days, several grey squirrels were observed. Each one would take a row and with rapid digging, would take every kernel of corn planted there. In less than half an hour one squirrel destroyed thirty-two hills of grain. Only once did a cock pheasant visit the same area. It took the pheasant much longer

to dig up just one seed; he would hesitate, and spend considerable time delving in the soil in places where no corn was planted. The pheasant cock was collected, and, upon examination, had three kernels of corn and five grubs in his crop.

Several hundred domestic pigeons were also collected in farm districts, and found with their crops filled with planted grain.

There is no doubt that pheasants will often take planted grains; still, it is questionable whether the damage he does exceeds the good. In view of all the pests that do so much more damage, is it fair to condemn the pheasant as an enemy of agriculture?

Collecting and examining pheasant crops has resulted in some very interesting findings. Above all, it attests the omnivorous feeding habits, and most of all their crafty methods of procuring subsistance through the tough winter months. No attempt was made to examine the gizzards, as crop contents give a clear picture of just how various feeds were proportioned. Shooting preserve coöperators were asked to tear out the crop of each bird killed, dry it for a few hours near a fire, and send it in. A great deal more trouble is involved in removing and shipping gizzards. The preserve men tied strings around the skin of the crop and filled out cards explaining when the birds were shot, in what kind of cover, and how far from cultivated fields. Eighty-seven per cent of the birds were taken from brush and grass marshes. Others were shot in corn fields, grain stubble, fence rows, and similar places. It appears evident that without the marsh lands, pheasants in Wisconsin would be very scarce. The combination of grain fields near marsh cover holds as the most popular place for pheasants. Few birds were killed—and probably few occur—in fields more than half a mile from the marsh. Vast stretches of marsh land surrounded by soil of poor quality carries very few birds. However such places can usually be changed by planting food patches. Hemp and millets will often prove valuable. It also pays to just plow up patches of such land, and leave it grow up with food bearing weeds which come up when soil is turned.

Field corn was the principal diet of pheasants during the fall and winter months. Even during August waste corn was found in a number of crops. When corn is in the milk stage the birds apparently preferred it to the abundant weeds and insects then available. It must also be remembered that it takes a goodly number of small weed seeds to equal a kernel of corn.

It is estimated that in one day upland game birds consume the quantity of their crop filled twice. The greatest amount of corn

found in one pheasant crop (moist weight) was 2.2 ounces. Where birds fed exclusively on corn the average crop weighed two ounces. From birds previously examined, together with the 141 crops here reported, it is concluded that about one-third of the pheasants' fall and winter diet in southern Wisconsin, consists of corn.

If then, a farmer had twenty-five pheasants on his property each bird would take one-third of four ounces (two feedings of two ounces each) per day, or 1.3 ounces of corn per day. On this basis it would take approximately sixty pounds of corn to feed twenty-five preasants per month in the wild. Assuming that corn was left in the fields for four months the farmer would invest possibly 240 pounds of corn, or about $3.60 worth, in pheasants. That is figuring the corn at a cent and a half per pound in the field which is usually a very good price.

Now in figuring the benefits of the twenty-five pheasants we have the insect and weed control, either of which might cost the farmer a much heavier loss. In Wisconsin there is a possibility of realizing a direct return through selling hunting privileges under the private shooting preserve law. Permitting the shooting of one-third of the twenty-five birds would net the farmer at least twice the price of 240 pounds of corn.

In some localities farmers find it profitable to plant food patches for game birds. Yellow kaffir corn, or wheatland milo maize has been found to be good for such patches. It should be left standing or placed in bundles along fence rows. Such grains broadcast over the surface, along the outside edges of newly planted corn fields tends to prevent pulling of corn by pheasants or other pests.

Kaffir, planted broadcast is often satisfactory roosting cover when natural grass and marsh are absent from the farm. The Wisconsin Conservation Department last year distributed to farmers and sportsmen seed enough for more than 2,000 patches. Most grains other than corn found in the crops was waste grain left after the threshing or it was taken from the manure spread in the field for fertilizer. The practice of spreading manure over the snow has served as good feeding stations.

As before stated the game birds find feeding conditions most favorable during the early fall months. Grasshoppers appeared in half of the fifty-three crops examined in October, and many of them were eaten as late as the month of November. In the October crops other feed in order of abundance was, common ragweed, yellow foxtail, nightshade bittersweet, and Canada thistle. Yellow foxtail being almost as prevalent as common ragweed. Commonly pheasants' crops

were found packed with Canada thistle seed, as many as 4,000 being taken from one bird. Similar quantities of foxtail and ragweed were counted. Twenty-two grasshoppers was the greatest quantity of insect life found in one crop. Nightshade bittersweet proved to be an excellent fall and winter food and it is well distributed in most of the state. Acorns were taken in less quantity, but the fact that acorns were found in crops at a time when other feeds were abundant indicated that they are not a starvation diet. At the Wisconsin state experimental game farm some pheasants were penned and fed exclusively on acorns while in an adjoining pen the birds were fed strictly on corn. After several months the experiment revealed that the birds fed on acorns weighed more than the birds fed on corn. Otto Beyer, of Portage, Wisconsin, also found acorns a good food and chopped up quantities, feeding it with mixtures of grains to birds in captivity.

The month of November showed the greatest variation of food. Ragweed stood out second in importance to field corn. Begger-ticks and Spanish needles were found packed in the birds' crops without sign of any other material. This was also noted on many other occasions in other years when crops were examined.

Of special significance is the discovery that the pheasant eats an immense amount of poison sumac during December and January. Sumac eating began in November. In December it was nearly as important as corn, and in January more poison sumac was eaten; 32.5 per cent of the contents from twenty-four crops was sumac as compared with 24.1 per cent corn. It is difficult to explain this. There was an abundance of fruit on the sumac last season, and it may be a case of the birds taking what was most easily accessible. Poison sumac is common throughout the southern half of the state; it grows in tamarack marshes which constitute good cover. Fecal observations gave further evidence that both pheasants and quail were feeding much more extensively upon this than upon any other food. Poison ivy, which belongs to the same family, was also eaten during the winter, but not nearly in the same quantity. Poison sumac and poison ivy seeds look very much alike and probably are of similar nutritive value. Perhaps if the ivy had been as available as sumac the birds would have taken more of it. It is believed that thousands of birds were saved from starvation by finding such a great deal of sumac available during the pinch period.

TABLE 1. To show the frequencies and percentages of the various food items used by the Ring-necked Pheasant in Wisconsin. The data were obtained from 141 crops taken during August, October, November, December, and January.

	DOMESTIC FOODS	CROPS TAKEN IN									
		Aug.(4)		Oct.(53)		Nov.(38)		Dec.(22)		Jan.(24)	
		No.	%	No.	%	No.	%	No.	%	No.	%
1	Corn (zea maize)	3	62.3	29	25	20	33.8	10	23.3	8	24.1
2	Wheat (Triticum sativum)			1	.5	4	1.2	2	2	1	2
3	Barley (Hordeum vulgare)			3	.4	3	.2	1	3.2		
4	Oats (Avena sativa)	1	26.6	6	2.9	1	.5	1	.2		
5	Buckwheat (Fagopyrum fagopyrum)					1	1				
6	Soy Beans			1	.2						
7	Lima Beans			2	.3						
8	German Millet			1	.6						
9	Amber Cane					1	.3	1	.8		
10	Watermelon Seed									1	2.3
11	Timothy			1	.2						
12	Alfalfa and Clover Leaves (trifolium sp.)			7	1.2						
13	Squash Seed							1	2.6		
	WILD SEEDS, FRUITS, BERRIES										
14	Ragweed (Ambrosia artemisiifolia)			20	14	15	20.4	2	1.8	2	4
15	Yellow Foxtail (Chaetochloa glauca)			15	12.8			1	2.2		
16	Green Foxtail (Chaetochloa viridis)			1	.3	1	.4	1	.4		
17	Impatience (Impatiens biflora)			4	.4	3	2.5	2	4	1	.8
18	Lady's Thumb (Polygonum persicaria)			2	1.4	2	1.8	2	4.1		
19	Begger-tick (Bidens comosa)					2	4.3				
20	Spanish Needle (Bidens bipinnata)					3	3.2	5	14	3	7.4
21	Giant Ragweed			3	1.5	2	3.2			1	2
22	Wild Buckwheat (P. convolvulus)			4	1.1	3	.6	4	4		
23	Smartweed					1	.3			1	1.3
24	Bull Thistle			2	3.7						
25	Canada Thistle					1	.8				
26	Wild Hemp			1	2.5					1	.6
27	Agrimony					1	.4			1	3
28	Burdock					1	.2				
29	Sesame					1	.6				
30	Meadow Rue									1	.4
31	Blue-skull Cap (Scutellaria lateriflora)					1	.2	1	2.5	2	4.3
32	Panicum					1	.2				
33	Compass					1	.2	1	1.2		
34	Lonseed					1	.4				
35	Indian Mallow					1	.2				
36	Rough Avens (Geum virginianum)							1	.7	2	.7
37	Tick Trefoil							1	.2		
38	Scarlet Pimpernel									1	.3
39	Redroot									1	.3
40	Milkweed					1	.8				
41	Clevers Goose Grass Seed							1	.1		
42	Vetch Seed (Panicum capellare)			1	.2			1	.2		
43	Dead Hemp Nettle							1	1.3		
44	Skunk Cabbage (Sumplocarpus foedidus)					2	2.5	2	1.5	1	.5
45	Wild Bean (Strophostyles pauciflora)							1	1.1		
46	Water Plantain							1	.3		
47	Poison Sumac (Rhus vernix)					4	5.6	5	20.2	10	32.5
48	Smooth Sumac					2	1.4			1	.4
49	Poison Ivy (Rhus toxicodendron)							1	.5	1	4.1
50	Dogwood (c. asperifolia)			1	.2	1	1.7	1	.2		
51	Wild Rose					2	1.4			3	4.6
52	Wild Grape			5	3	1	2				
53	Nightshade Bittersweet			5	4.2	3	2			1	1
54	Hazel Nut					1	1.2				
55	Hills Oak Acorns			1	1.7	1	1.7	2	2.4	1	3.3
56	Wild Cherry Pits					2	.5	2	.5		
57	Grasshoppers	1	10.1	26	16.7	6	5.4				
58	Beetles (Coleoptera) and Larvae			3	.4	3	.6				
59	Lepidoptera larvae			1	.2						
60	Ants			2	.2						
61	Snails					1	.7				
62	Grass Blades and Organic Debris	1	.1	7	.6	1	.7	1	.3		

Poison sumac and ivy, corn, ragweed, Spanish needle, wild rose hips, skunk cabbage, and blue skull cap were also important feeds during January, and undoubtedly continued to be of importance throughout the winter.

In some localities where giant ragweed was abundant, there were indications of pheasants feeding upon it. More than thirty varieties of weed seed were found in the 141 crops examined, and sixty other foods including domestic grains.

In general, it can be concluded that the pheasants, with their versatile feeding habits, their importance in helping to control noxious weeds and insects, as well as their sporting value are worthy of continued encouragement by the hunters and farmers.

HAVANA, ILL.

SOME COLD-WEATHER BIRDS OF THE UPPER PENINSULA OF MICHIGAN

BY RALPH BEEBE

The Upper Peninsula of Michigan was acquired by the state in lieu of the disputed strip of land upon which is now located the city of Toledo, Ohio, much to the disgust of the citizens of the state at the time. Since that time it has become a rich mining area, its vast forests have passed through the lumbering boom days with their successive forest fire and second growth timber stages, its supposedly rock-pile and iceburg surface has given way to fertile farms. Thousands of tourists, hunters, and fishermen travel over well surfaced roads or thread barely discernible trails through the wilderness.

It has an abundant of varied fauna, little known until recent years and there is still great opportunity for study. In presenting this article the writer does not attempt to present a complete list or to name all species personally observed but to make notes of some of the more interesting species. The following notes refer to the vicinity of Newberry, Luce County, Michigan.

EASTERN GOSHAWK. *Astur atricapillus atricapillus.* Often abundant during the fall migration and some may be found at all seasons.

CANADA SPRUCE GROUSE. *Canachites canadensis canace.* Formerly quite common but now found only in the deeper forests if at all.

CANADA RUFFED GROUSE. *Bonasa umbellus togata.* Probably as abundant now as at any time in the past.

GREATER PRAIRIE CHICKEN. *Tympanuchus cupido americanus.* Unknown at the time of my residence (1916) but said to have spread over the larger part of the country since them.

EASTERN SCREECH OWL. *Otus asio naevius.* Rather rare and apparently near the northern limit of its range.

GREAT HORNED OWL. *Bubo virginianus virginianus.* The most common owl. An early settler's farm was repeatedly raided by one of these birds, which carried away turkeys, chickens, and the family cat. It was subsequently found with a porcupine clutched firmly in its talons and, of course, both dead.

AMERICAN HAWK OWL. *Surnia ulula caparoch.* Occasional. Noted October 31, 1909, February 19, and March 29, 1913.

RICHARDSON'S OWL. *Cryptoglaux funerea richardsoni.* Probably more common than the records indicate. A specimen, found dead in April, 1913, was probably killed the previous January. A young bird of the year was captured July 19, 1913, but unfortunately the specimen was not preserved.

NORTHERN HAIRY WOODPECKER. *Dryobates villosus septentrionalis.* The prevailing form, intergrading into *Dryobates v. villosus.*

NORTHERN HORNED LARK. *Otocoris alpestris alpestris.* Abundant in flocks along the shores of the Great Lakes and occasional in the interior.

PRAIRIE HORNED LARK. *Otocoris alpestris praticola.* A regular and abundant migrant, arriving early (February 20, 1912) and remains late (December 2, 1898). Breeds rather sparingly.

NORTHERN RAVEN. *Corvus corax principalis.* Formerly common but rare in late years.

EASTERN CROW. *Corvus brachyrhynchos brachyrhynchos.* Occasionally winters. Two were distinctly heard during a blinding snowstorm January 31, 1916.

HUDSONIAN CHICKADEE. *Penthestes hudsonicus hudsonicus.* Noted in July, August, September, and October.

EASTERN ROBIN. *Turdus migratorius migratorius.* Late birds were noted December 16, 1909, December 21, 1910, December 13, 1911, and December 3, 1913.

EASTERN EVENING GROSBEAK. *Hesperiphona vespertina vespertina.* Formerly regarded as a rare winter visitor,* it is now established as a

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*Michigan Bird Life, p. 465.

breeding bird. I saw a flock of several adults and young of the year July 16, 1911. It was reported in summer by several observers and the nest was subsequently found at Whitefish Point in the eastern part.

Eastern Purple Finch. *Carpodacus purpureus purpureus.* Frequent at all seasons but more common in winter and during migration.

Canadian Pine Grosbeak. *Pinicola enucleator leucura.* The earliest recorded were August 15, 1909, and August 16, 1910. In spring to April 26, 1914, and April 27, 1915.

Hoary Redpoll. *Acanthis hornemanni exilipes.* Not very rare in autumn, appearing September 22, 1910, and September 28, 1911, remaining to March 13, 1911. In contrast to the other species, it occurs in scattering flocks, as far as my observation goes it is usually seen on foggy or frosty mornings and its note is harsh and irritating. It was noted feeding upon small moths, capturing them upon the wing like a flycatcher.

Common Redpoll. *Acanthis linaria linaria.* Often very abundant but its seasonal distribution is peculiar. It is another species formerly regarded as a winter visitor only, and is then seen with considerable regularity. I have seen single flocks which I estimated to contain 1600 birds. It becomes abundant with the approach of cold weather, October and November, but some appear in July and August. I saw a young of the year August 31, 1914, and Mr. M. J. Magee of Sault Ste. Marie has trapped numerous young birds in midsummer. I saw a flock containing males in rosy breeding plumage June 21, 1912, but as yet there are no breeding records. A southward migration in midsummer, bringing the birds commonly into the Upper Peninsula and as far south as Detroit (July 20, 1931, September 1, 1932) has no logical explanation. In March, 1911, a flock was observed feeding upon the Oyster-shell Scale (*Mytilaspis pomorum*) a destructive enemy of fruit trees.

Eastern Goldfinch. *Spinus tristis tristis.* My latest record is December 4, 1914.

White-winged Crossbill. *Loxia leucoptera.* Although usually regarded as a winter species, I saw only single individuals in summer.

Eastern Snow Bunting. *Plectrophenax nivalis nivalis.* An abundant fall and spring migrant and frequent in winter. Earliest date noted, October 9, 1909, and the latest, May 5, 1914.

Ecorse, Mich.

THE DANCE OF THE PRAIRIE CHICKEN

BY JOHN S. MAIN

We awoke at five o'clock, dressed hurriedly and started out at once for the blind. The sky was cloudy, the wind fresh and chilling. Keeping to the main road for a short distance, we presently turned off and followed a lane, flushing a pair of Hungarian Partridges by the wayside. At the end of the lane, we left the car and headed north, our path lined by a row of venerable willows. Open country stretched before us as far as the eye could see, and also toward the east, where the land lay low and flat to the river, a mile away.*

From a distance we could hear the mellow whistle of an Upland Plover, and from overhead the winnowing of a snipe. A pair of Short-eared Owls were sweeping the fields with their singularly rapid wing-beats, while from lagoons toward the river we could see ducks rising—Mallards, Teal, Baldpates, Pintails, and Shovellers. It was easy to understand why this was once a favorite resort of the Indian tribes, and of the mysterious people who built the pre-historic village of Aztalan, a few miles down the river.

As soon as we emerged on the prairie we could make out with our glasses the blind, and near it some cocks, whose booming we had been hearing, but so wet was the intervening ground from recent rains that much wading was required before we could reach the relatively dry area surrounding our observation post. Long before we arrived the birds had flown off, so that it was a matter of awaiting their return, sitting on a bench in the blind and watching through loop-holes left for the purpose. We could hear booms in the distance and were fearful lest our birds had chosen some other spot, but before long they began coming back, one at a time, stalking warily through the grass, pausing every few steps to look around and size things up. They kept on coming, however, until finally they were again in front of the blind, the nearest scarcely twenty feet away. When all were accounted for, there proved to be eleven of them, all cocks—this, according to our host, being the number that has commonly been present during the month or more since his observations began.

The so-called booming ground comprised a space some twenty-five yards in diameter and differed from the surrounding marsh only in the absence of the tall, dried stems of the prairie-dock, with which the latter was sparsely covered, and in the fact that the shorter and thicker

*The date was April 24, 1936; the place, Favill's Grove, near Lake Mills, Wisconsin; the host, Mr. Arthur Hawkins.

blue-joint had been well flattened down. Beneath this grass the ground was quite soft, differing in this respect from the locations usually chosen for these assemblies.

As each cock appeared on the scene he at once began his exhibition. He lowered his head, puffed out his feathers, and raised his tail to show its white under-coverts, the wings being held down, stiff and straight, so as to scrape the ground. He distended the hidden sacs on the sides of his neck until they were the size and color of oranges. He stamped the ground like a maddened bull. He made sudden rushes at a real or imaginary opponent. He gave sudden, upward leaps, often making complete revolutions in mid-air. When not otherwise engaged, he contented himself with walking slowly about with all the dignity of a turkey gobbler. There were two cocks off by themselves at either end of the line, out on the wings of the stage, and it was interesting to observe that they went through the same rôles as the others, each with complete absorption in his own performance. One of these took first prize as a high jumper, clearing the bar at a good four feet. During all this time every one of the cocks was giving vent to a varied assortment of booms, toots, calls, and cackles, which, combined with similar outbursts from all the others, produced an indescribable medley of sound.

Encounters were frequent. Every now and then one cock made a rush at another, whereupon the two stood face to face, each apparently trying to stare the other out of countenance. In this, one would eventually succeed and his opponent would turn and move slowly off, crestfallen. Often one or both would assume a crouching attitude, as though each thought to gain an advantage in this manner, like opposing tacklers in a line of scrimmage. On only a few occasions did they actually come to blows, at which times they flew at each other and came together with a resounding clash of wings. In the other cases it seemed largely a game of bluff. In fact, it was, at any time, difficult to tell whether the combatants were in earnest or were merely play-acting.

On two or three occasions a cock from outside, possibly the same one each time, tried to join the party, but each time was promptly attacked and driven off by the others. Who was he? Was he a former member of the inner circle who had been expelled for some cause, or was he an outsider seeking admission? If the latter, we can but wonder how and when the roll was completed and the doors closed to new arrivals.

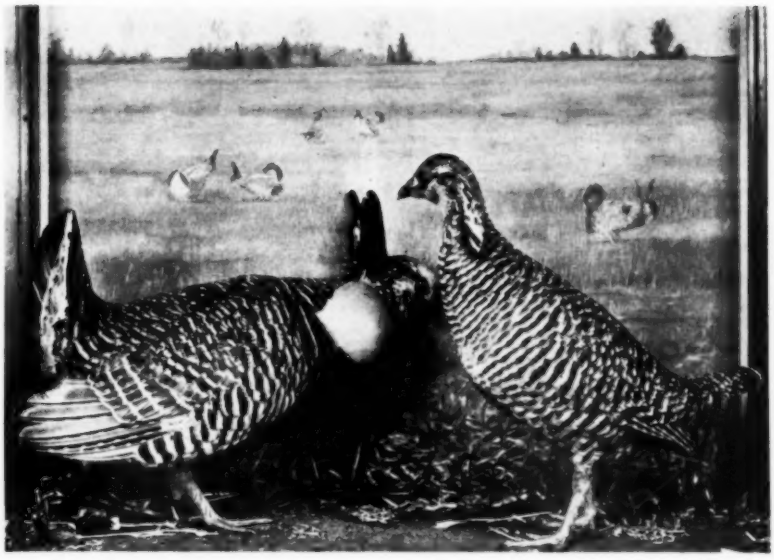

FIG. 5. Mounted specimens of the Greater Prairie Chicken. From the Milwaukee Public Museum.

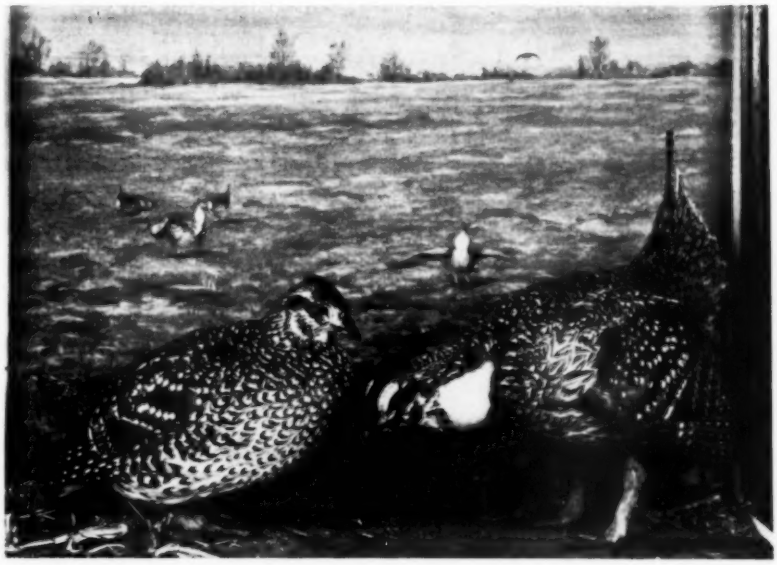

FIG. 6. Mounted specimens of the Sharp-tailed Grouse. From the Milwaukee Public Museum.

After we had watched for some fifteen minutes, we saw that a hen had arrived, and had become the center of interest for several of the cocks. These cocks did not show any inclination to fight, being apparently content with showing off. Their efforts were not noticeably different from what they had been or from those of the other cocks, who went on just as before, each intent on his own affairs and wholly unmindful of the lady's presence. She, meanwhile, seemed equally indifferent to the attentions of her suitors. She remained motionless most of the time and apparently took no notice of them whatever. Experience may have taught her that this is by no means an ineffective way of attracting admirers, but at any rate none of the males was given preference and no mating took place.

An interesting question arises as to the presence of this hen. Our host states that out of a dozen mornings spent in the blind this spring, he saw hens on the booming grounds only twice—one at the time mentioned above, and two at a later date. This is in accord with the testimony of other observers, many of whom have never seen a hen present, while few appear to have seen more than one at a time, and these usually at long intervals. What does this mean? Why was the hen there? Was it for the purpose of mating? Being unsuccessful this time, would she come again? Had she been successful might she have come again? Is a single mating sufficient to fertilize a clutch of eggs? Does mating usually take place on or off the booming ground?

Intriguing as these questions may be, it is the behavior of the cocks themselves that excites our curiosity most; and this brings us to inquire the meaning of the whole performance. It should be, one would suppose, a fascinating employment for an ornithologist. Though many observers have described the scene, not one has yet offered an interpretation that is wholly satisfactory, nor has any one made any serious attempt in that direction. It has usually been thought sufficient to define it as a courtship ceremony attended by nuptial displays and more or less fighting between rival males—a description which could be applied just as well to the courtings of countless other species, from bluebirds to penguins. Another authority has stated that these exhibitions are merely an outlet for the surplus physical energy incident to the mating season, but he does not explain why such single-handed performances as the drumming of the Ruffed Grouse or the thrilling head-dives of the male Marsh Hawk do not come in the same category. We would all probably agree that the mating instinct is the actuating force behind our little drama, but the question as to why it expresses itself in this singular form is still unanswered.

Let us take the fighting, for example. Many of the older writers such as Audubon, Nuttall, and Brewer believed that this was the primary purpose of the gathering. According to Audubon's lively description, the males "to the number of a score or so, before the first glimpse of day lightens the horizon, fly swiftly and singly from their grassy beds, to challenge and to fight the various rivals led by the same impulse to the arena." ("Birds of America", Vol. V, p. 96). Modern observers, however, generally agree that the fighting plays a less important rôle and this opinion was well borne out in our own case by the fact that no encounters took place until the cocks had been for some time on the field. Accounts also differ as to the character of the fighting. The battles are sometimes described as extremely fierce, with much shedding of blood and feathers, but in our case, at least, such fights as took place were hardly worthy of the name. They were very brief affrays and though some spirit was shown there was never the least sign of injury or exhaustion. Again, most observers have assumed that these battles are analogous to those commonly indulged in by rival males contending for a female—battles in which one or the other is decisively whipped and thereby eliminated for all time as a contender. In the case of the prairie cocks, however, there is an important difference in that there are usually no females present. Moreover, this analogy fails to account for the fact that the same combatants return each morning throughout the mating season, and re-enact the same scenes as though nothing had happened.

Finally, there is the rest of the performance, the displays, the dancing, and acrobatics. We saw, as already stated, but one hen, and while it is possible that there were others concealed in the grass near by, it was doubtful if such was the case. If, therefore, we should assume that the whole show is staged for the benefit of the hens, we must be ready to believe that the actors would continue day after day, and week after week, playing to empty seats. Moreover, even though the cocks thought that members of the other sex were looking on, we would still be in the dark as to what they were trying to accomplish. We can not believe that any one of them had in sight any particular lady-love whom he was seeking to captivate. Was he, then, going through his act on the mere chance that some susceptible female might be enticed from her hiding place? If so, he should have borne in mind that she would be equally exposed to the solicitations of his rivals. Or was he hoping so to charm his imaginary admirer that when he had finished his act and left the stage he could make an easy conquest? Or are all these antics, as they are called—the puffing out

of feathers, the stamping, leaping, and rushing, and the threatening attitudes—are they only meant to intimidate the other cocks and thus better his prospect of victory over them? Similar instances are innumerable; for example, a cat raising its back, a bristling dog, a gorilla pounding its chest, the hunting cry of a tiger.

It may be that we shall never find a satisfactory answer to the questions here raised, but if we are to attain any measure of success we should not overlook the really distinguishing feature of the performance, which lies in there being not one but several participants. It is a *communal* affair, and if we are to explain the conduct of the individuals we must first ask ourselves why they come together. Whether there is any end, important to the welfare of the species, which is better served by them if acting as a group than if acting singly. One thing we know, that there is a contagion in numbers whereby emotions are greatly aroused, well shown in the actions of a mob, or in the war dances of the Indians. It is also known that the physical forces respond to the increase in emotional ardor, so that feats of strength are performed which could never be done without the emotion. So, in the case of our prairie cocks, we must assume that their passions and vigor are, at such times, inordinately heightened, and it does not seem difficult to believe that some relation may exist between this condition and the all-important mating.

Edmund Selous, in his notable book entitled "Bird Watching", makes the suggestion that actions which were at first performed for a definite purpose may in time become only a ceremony. To quote his words: "In this case we should have a pure antic or display, the reason for it being unobvious and its origin a mystery." If anything is needed to corroborate this theory we need only cite the yearly flights of Golden Plovers by land and sea, which can only be explained as a habit that has outlived its original purpose and the environment under which it was formed. To say that the dance of the Prairie Chicken may be a similar case of survival, though of less ancient origin, may be unwarranted; but it would seem, at least, that some student of ecology might well make an effort to determine whether it serves any useful end; or whether it is only a ceremony, an empty ritual whose meaning lies hidden somewhere in the past history of the species.

Madison, Wis.

BIRD BEHAVIOR AS A RESULT OF EMERGENCE OF SEVENTEEN YEAR LOCUSTS

BY WILLIAM JOHNSTON HOWARD

On May 31, 1936, the writer visited the Crown Hill Cemetery, Indianapolis, Indiana, to witness the emergence and behavior of periodical cicadas, or seventeen year locusts (*Magicicada septendecim*). The locusts were not only in great abundance, but their numbers caused an unusual concentration of insect-eating birds within the cemetery grounds.

The cemetery is a tract of between five and six hundred acres of gently rolling land, surrounded upon all sides by the City of Indianapolis. Although the cemetery is not a new one, some of the stones being dated 1862, slightly more than half of the grounds are yet utilized as burial lots. There are numerous large hardwood shade trees, and fair-sized plots of trees and dense undergrowth. The largest of the numerous wooded parts would probably not exceed eight or ten acres in size. From all appearances, the cemetery, with its specimen trees, woodlands, and open fields, makes an ideal place for a variety of song birds. The superintendent informed the writer that for several years past there had been a covey of Bob-whites on the area, until an old field had been converted into lawn.

Not only were the locusts audible as one drove into the grounds, but they were visible at a number of different places. Many of the tree trunks had numerous pupa-skins upon them, and at the bases of these trees the skins were lying in great numbers. Some of the old rough-surfaced tombstones had skins and live locusts upon them. In the areas of concentration it was difficult, not to locate the insects, but to prevent having numbers of them light upon the clothing. It was of interest to note that the distribution of the locusts was not uniform over the whole area; some parts were practically devoid of them, while in others they were very numerous.

An interesting feature of the appearance of the brood was the presence of numbers of insect-eating birds, which had no doubt been attracted by a large supply of easily procurable food. It was noted that the largest numbers of birds were to be found adjacent to good, shrubby cover.

No attempt was made to list all species of birds found feeding upon the locusts, the purpose being to observe the behavior of the birds most in evidence. Birds noted actually feeding upon the locusts, in order of their abundance in open places, were English Sparrow

(*Passer domesticus domesticus*), Eastern Robin (*Turdus migratorius migratorius*), Starling (*Sturnis vulgaris vulgaris*), Bronzed Grackle (*Quiscalus quiscula aeneus*), Eastern Cowbird (*Molothrus ater ater*), and Red-headed Woodpecker (*Melanerpes erythrocephalus*). Other insect-eaters were seen, but were not observed to eat any locusts.

The English Sparrows were by far the most numerous and were the species which might be said to have been in much larger numbers than would have ordinarily been found in such a location. Although there were multitudes of dead and dying insects upon trees and the ground, the sparrows were very active in pursuing flying locusts. As many as three sparrows were seen to chase a single insect, and the squabble and fight characteristic of this bird usually ensued when one of the birds caught an insect. In several instances adult sparrows were seen feeding parts of locusts to their young.

The number of Robins appeared to be but little more than would ordinarily have been found within such a favorable location. While many of them were seen to feed upon locusts, a few were observed pulling earthworms from the sod, in a land of plenty.

Fewer Starlings were observed than might have been expected, as a large summer population is usually present in Indianapolis.

Although Bronzed Grackles are usually not seen in other parts of the city at this time of year, they were frequently seen in the cemetery. Their method of feeding seemed more deliberate than that of the sparrows; they did not chase the insects, but rather daintily ate those easily caught.

Three Cowbirds were observed, gleaning the lawns and leisurely eating a locust now and then.

Two Red-headed Woodpeckers were observed in the act of consuming parts of locusts.

Although four Northern Flickers (*Colaptes auratus luteus*) were seen, none of them appeared interested in feeding upon the abundant supply of material, but fed in their usual manner by picking insects from the sod.

From the observations made, it appeared to the writer that English Sparrows were attracted in large numbers to an easily available supply of food and acted in a "clean-up" capacity to a greater extent than any of the other birds seen. Although present in lesser numbers than the English Sparrows, Robins and Bronzed Grackles seemed to be the other species which were attracted by the insects.

National Park Service,
Richmond, Virginia.

EDITORIAL

THE TWENTY-SECOND ANNUAL MEETING of the Wilson Ornithological Club was held at the Chicago Academy of Sciences on November 27, 28, and 29, 1936, the Inland Bird Banding Association meeting in conjunction. It had been ten years since our last meeting in Chicago. At this meeting we missed the presence of a number of our Chicago colleagues who have added to the pleasure of other meetings. Messrs. P. B. Coffin and Chreswell J. Hunt have passed away since we last met. Messrs. B. T. Gault and E. R. Ford were unable to be present. It is a common experience that friendships are made at these gatherings, the renewal of which is looked forward to from year to year. The twenty-third annual meeting will be held at Indianapolis during the Holidays of this year.

The following figures give a statistical summary of the organization for the past five years:

	New Orleans 1931	Columbus 1932	Pittsburgh 1934	St. Louis 1935	Chicago 1936
Local Attendance	11	92	49	24	62
Out-of-town Attendance	81	65	129	88	70
Total Attendance	92	157	178	112	132
Dinner Attendance	35	69	72	70	54
Titles on Program	27	35	39	38	27
Honorary Members	7	7	6	6	5
Life Members	7	10	12	11	11
Sustaining Members	57	75	44	42	40
Active Members	214	175	154	189	212
Associate Members	461	469	507	538	640
Total Membership	744	734	721	784	906
New Members Added	162	113	112	141	170
Pages in BULLETIN	334	256	288	318	336
Total Income	$2686	$2191	$2230	$2494	$2222
Fiscal Balance	$731	$547	$842	$767	$581

SEVERAL CHANGES in our official personnel are to be recorded. During the years since our Library was first established Mr. F. P. Allen, of the University of Michigan Library Staff, has served as our Librarian. Those of us who have been in a position to see him and know his work have realized his interest in building a substantial and useful library. Within the past year Mr. Allen has been called from our territory, thus automatically severing his relations with us. His successor in the University is Mr. F. Ridlen Harrell, who has consented to assume charge of the W. O. C. Library. We express our gratitude to Mr. Allen for services rendered, and our greetings and best wishes to Mr. Harrell.

Dr. L. E. Hicks resigned as Secretary after having served for five years. This is the longest service in this office in our history, and has been equalled only by Mr. B. T. Gault and Mr. A. F. Ganier. Dr. Hicks' term has been one of marked activity. During these years a total of 650 new members have been added to the roll. He has built four annual programs and has managed four annual meetings. The number of pieces of mail sent out from his office has been many thousands. In addition to this work for the Club he has published 105 notes or longer articles in the various fields of his interest. He is succeeded in office by Dr. Olin S. Pettingill, Jr., of the Department of Zoology, Carleton College, Northfield, Minn. We welcome him as a co-worker, and with the gentle admonition that he is in a line of able men; and for him we wish the utmost success.

At the beginning of 1925 Professor M. H. Swenk joined the writer in assuming editorial direction of the WILSON BULLETIN. Through twelve years that association has continued. Professor Swenk now feels that he must relinquish this duty. During these years he has most faithfully performed his allotment of work on the BULLETIN. The record shows that he has prepared for the printer 638 short communications, covering 363 pages of the magazine. As a further measure of achievement we wish it were possible to indicate the number of readers of this material. It is only by such a cumulative retrospect that it is possible to appreciate labor of this kind. We express our own personal appreciation for Professor Swenk's unfailing services and loyalty. We hope there is ample reward in the knowledge of work well done. This work will be carried on by Professor O. A. Stevens, of the North Dakota Agricultural College.

The normal size of the WILSON BULLETIN is sixty-four pages. The last two issues for 1936 contained, however, ninety-six pages each. This increase was made possible by the splendid work of Dr. Hicks in enrolling new members to fill the places of those who dropped out. Credit is due no less to our many loyal members who assisted by securing new members or by sending names of prospective members to the Secretary. It is our policy to increase the size of the BULLETIN to the extent of our financial resources. We do, however, try to begin the year modestly, with reference to volume, and make our best showing in the last two issues of the year. We feel sure that our members and readers will be just as generous in their support of Dr. Pettingill's efforts to build up our membership as they have been with past secretaries.

IN JANUARY of this year the National Association of Audubon Societies announced the establishment of two Audubon Research Fellowships. One is located at Cornell University under the direction of Dr. A. A. Allen, and has for its objective the study of the status, ecology, and best methods of preventing the extermination of the Ivory-billed Woodpecker. Mr. James Tanner has been appointed to this fellowship. A second fellowship has been located at the University of Arizona under the direction of Professor Charles T. Vorhies, and has for its objective the study of the status, ecology, and best methods of preventing the extermination of the Desert Mountain Sheep of the southwest. Mr. A. A. Nichol has been appointed to this fellowship. The project of these fellowships now seems to be launched under the most favorable conditions.

GENERAL NOTES

Conducted by O. A. Stevens

The Starling in Moody County, South Dakota.—Moody County is in the extreme east-central part of South Dakota and is adjacent to the Minnesota state line. The writer saw several pairs of European Starlings (*Sturnus vulgaris vulgaris*) west of Colman, in that county. One pair of birds was seen a short distance from the Lake County line. The Starling has been reported from both the northeastern and southeastern corners of South Dakota and is now apparently starting its invasion into the central part of the state.—Wm. Youngworth, *Sioux City, Iowa.*

Birds Apparently Electrocuted.—Near Youngstown, Ohio, an unusual "bird killer" was noted on August 29, 1936. Birds that alighted upon a certain electric light wire had been electrocuted. After death the bodies hung there until wasted away. At the time of our visit seven bodies were hanging on the wires, mostly Starlings but one was a Flicker. The wires are not close together so we were at a loss to explain the tragedy.—Merit B. Skaggs, *Cleveland, Ohio.*

Effect of the Drouth on Water-Fowl.—The past breeding season has been the most unfavorable for water-fowl that this area has ever known. About seventy-five per cent of my sloughs have dried up. Indications early this spring were for a favorable hatching, but a large number either moved out in July or succumbed to drouth. There were far less broods this August than last. This area has always been particularly favorable for Canvas-backs and now it is ruined unless we receive a tremendous fall of snow this winter. This species is one of the most threatened. I think it is high time that something more drastic should be done regarding hunting, and am very disappointed that the regulations passed this year are so lenient.—O. C. Furniss, *Prince Albert, Sask.*

Incidents in Bird Behavior.—The severe wind and rain storm of June 26, 1936, was the cause of a considerable mortality of young birds at Sioux City, Iowa. At the home of Mrs. L. L. Kellogg, the gardener found a Robin's nest with young birds which had been blown from a tree. He put the nest together as best he could, using rubber bands, and placed it on a food-shelter in the tree from which it had blown. When the young birds were placed in the reconstructed nest, the old birds took up the task of feeding and rearing the young as if the nest had not been disturbed. On the same premises Mrs. Kellogg observed a mature Catbird feeding a half-grown Flicker. She thought the young Flicker had been dislodged from its nest or separated from its parents during the same storm. —W. J. Hayward, *Sioux City, Iowa.*

White Herons in Ohio.—On September 27, 1936, a Snowy Egret (*Egretta thula thula*) was observed at Linesville Lake which is part of the Pymatuning Reservoir project, located just east of the Pennsylvania-Ohio state line. The bird was watched as it fed at a distance of about fifty feet and the yellow toes and black legs and bill carefully noted by Vera Carrouthers, Mrs. Skaggs, Ralph O'Reilley, and the writer. Nearby we saw an immature Little Blue Heron and an American Egret, thus giving us the unusual opportunity of seeing all three "white herons" that visit us in late summer. On October 4 we saw a Snowy Egret (probably the same bird) in exactly the same place and noted that in feeding it stood on one foot and stirred up the water with the other. There are very few records of the Snowy Egret in this region.—Merit B. Skaggs, *Cleveland, Ohio.*

The Alder Flycatcher in Upland Situations.—I was interested to note that Mr. Louis W. Campbell in his article on the Alder Flycatcher in the September WILSON BULLETIN, appears to consider the occurrence of these flycatchers on unwatered uplands markedly unusual. All observations I have made on this species in the State of Iowa have taken place in dry, upland pastures, especially where there were rank growths of hazel bushes, wild crab, and hawthorn. I have noted specific instances in northwest Iowa in Woodbury County, in the southwest in Taylor County, and in the southeast in Keokuk County. I have observed the species as common in New York, and have found them all in boggy situations where alders, buttonbush, and other marsh shrubs grow abundantly. It occurs to me that the presence of this species in such surroundings in summer as those described by Mr. Campbell may be fairly typical of its haunts farther west. Perhaps observers in Indiana and Illinois could give additional information on the question.—CHAS. J. SPIKER, *Branchport, N. Y.*

Further Notes on the Water Birds of Rockbridge County, Virginia.—The following notes are supplementary to an article, "Water Birds of a Virginia Mountain County", which appeared in the WILSON BULLETIN (Vol. XLVII, No. 1, March, 1935). I then listed fifty species and subspecies known to have occurred in Rockbridge County, Virginia, with two additional species in a footnote. Since then four other species have been added. We have recorded 169 land birds from the same area.

Red-throated Loon. *Gavia stellata.* This bird I then mentioned as hypothetical. Now a young man has given me a careful description of a bird captured just outside Lexington in late spring in 1924 or 1925 which could only have been a Red-throated Loon in breeding plumage.

European Teal. *Nettion crecca.* One was collected at Big Spring Pond on February 1, 1936, which had probably been there for over a month. The identification has been confirmed by Dr. H. C. Oberholser. (See the *Auk*, Vol. LIII, No. 2, April, 1936, p. 208). Curiously enough, I saw at the same pond on November 30, 1936, a male Green-winged Teal which had neither the white bar before the wing nor the white scapular stripe.

Black-bellied Plover. *Squatarola squatarola.* A highly-colored individual spent two days, May 25 and 26, 1935, at a large rain pool near Lexington.

Common Tern. *Sterna hirundo hirundo.* On September 6, 1935, a number of terns were flying over the North River at the East Lexington Bridge. I was told that before I arrived there were ten or fifteen of them. When I came in sight there were only four, and they were leaving. But I had the opportunity to study one of them in good light. The white inner webs of the outer tail feathers indicated that it was a Common Tern, although I realize that my identification was not beyond question.

Additional records of some of the birds already on the list may be worthy of note. On January 7, 1937, a Common Loon was shown to me that had been taken alive. It was later liberated. Prof. Ruskin S. Freer reports a Double-crested Cormorant in James River, at Snowden, just outside this county, on May 1, 1936. The American Egret was not uncommon in late summer in 1935 and 1936. I now have two other records, April and September, for the Black-crowned Night Heron. A male Gadwall, seen on James River, at Glasgow, gives a very late date for Virginia. A male Canvas-back was seen at Cameron's Pond on April

3, 1935. A female Old-squaw was captured on a street in Lexington on Christmas Day, 1933, by some boys. The Buffle-head was fairly common in 1935. I now have a December date for the Wood Duck, and a number of winter records for the Black Duck, Baldpate, Green-winged Teal, and Hooded Merganser; and additional fall dates for the Blue-winged Teal, Wood Duck, and Hooded Merganser. A flock of at least thirty Wood Ducks was seen on North River, September 28, 1936. I now have good reason to think that this duck is breeding in the county. Ducks were very common in the spring of 1935. On April 4 I saw 107 ducks, mostly scaups but including nine species, on the small expanse of Cameron's Pond. I have other January and February dates for the American Merganser, and another date, April 3, 1935, for the Red-breasted Merganser.

I would now rate the Semipalmated Plover as fairly common in May, with one fall record, September 14, 1936; and would rate the Least Sandpiper as common and the Semipalmated Sandpiper as fairly common in spring, with both as uncommon in fall. A late date for the Spotted Sandpiper is October 10, 1936. I have one fall date for the Greater Yellow-legs, October 14, 1935; and several for the Lesser Yellow-legs. The Ring-billed Gull was rather common in April, 1935, fourteen being seen on the 6th. Two Black Terns were seen with the Common Terns on September 6, 1935.—J. J. Murray, *Lexington, Va.*

The Speed of Flight of the Ruffed Grouse.—On May 24, 1936, while driving southeast from Mio, Michigan, toward South Branch, a Ruffed Grouse (*Bonasa umbellus*) flushed from the side of the gravel road and flew parallel with the right side of our car for a distance of about 250 feet. The bird took wing when we were about ten feet away, and in order to bring it alongside our line of vision we increased our speed from forty-five to fifty miles per hour. The grouse kept up this pace for a distance of 100 to 150 feet, after which it went into a glide, still keeping parallel to the road, which was straight at this point. It glided for about 100 feet and during this glide the speedometer registered approximately forty-seven miles per hour. The time of the observation was approximately 7:15 P. M. and the visibility was still good, although the sun was very near the western horizon. There was no wind. The observation was made from a 1935 Chevrolet and so far as is known the speedometer is accurate. The observers were J. S. Leonard and the writer.—David S. Shetter, *Institute for Fisheries Research, Ann Arbor, Mich.*

White-winged Scoter in Missouri.—On December 30, 1935, while quail hunting in the Ozark highlands near Current View on the Arkansas-Missouri line south of Doniphan, Ripley County, Missouri, I found a disabled White-winged Scoter (*Melanitta deglandi*). Quoting from my journal: "In passing through an oak thicket near a farmhouse, a duck, apparently disabled, was seen flopping over the snow. I thought at first it must be some barnyard duck which had been chased out into the woods by dogs. On close approach it proved to be a scoter. The mark on the snow showed that it had alighted on the spot from which I had first flushed it, all tracks and wingmarks being those just made in its struggle to escape. Presumably the bird either had lead-poisoning or was exhausted while flying in the recent storm."

There is no water suitable for scoters within a hundred miles.

The person who skinned the bird unfortunately discarded the carcass without sexing and without dissection. He had found a single shot wound in the head and thought that no other information was needed. The skin is in the University collection. Its colors are those of a female or immature.—Aldo Leopold, *University of Wisconsin, Madison, Wisconsin.*

Partial Albinism in Certain Species of Birds.—The following sight records taken direct from my field notes may be of interest to bird students.

On April 1, 1927, near Syringa on the Lochsa River, northern Idaho, I was attracted by what at first appeared to be a Rocky Mountain Jay perched on a fence post. A second glance proved it to be a Robin with head, neck, upper breast and a large part of the wings and tail pure white. It was not my fortune to remain long in that locality so I did not see the bird again but was told later by friends that it remained all summer, mated with a normal Robin and raised a family of young, all normal birds. The abnormal specimen proved to be a male.

On October 11, 1932, in a mixed flock of Bendire's Crossbills, Pine Siskins, and Cassin's Purple Finches, two of the latter were noted with a considerable amount of white in their plumage. A large part of the wing coverts of one were white while the other had two irregular shaped white spots in the wings and some white in the tail. This was at Spokane Meadows on the upper Little North Fork of the Clearwater River, St. Joe National Forest.

In a marsh near St. Maries, Idaho, on May 5, 1934, I saw a male Redwing (*Agelaius phoeniceus* subsp.?) with prominent white longitudinal bars near the base of the primaries and immediately adjoining the red and yellow shoulder patches. These spots were so similar to those of the Yellow-headed Blackbird that hybridism might be suggested but for the fact that otherwise the bird was a typical redwing in notes as well as in plumage. I saw it again on May 20 of the same year and apparently it returned the year following, for on May 22, 1935, I saw a bird with identical plumage at almost exactly the same spot.

June 1, 1934, is the next record. On that date and very near the spot where the abnormal Cassin's Purple Finches were seen, I had an excellent view of a Pine Siskin with the entire head and neck creamy white. The bird was otherwise normal and was associated with normal birds of the same species.

February 20, 1936, in the town of St. Maries, one of a flock of English Sparrows, apparently a female, was noted with the first primary largely white and with conspicuous white outer tail feathers.

I should also like to mention two individuals of which I have no written record but which stand out clearly in my memory even though seen more than a quarter of a century ago. One was a Slate-colored Junco with a pure white head seen in what is now known as Allen Park in the City of Jamestown in western New York. It was in a large flock of normal individuals of its kind in the spring of 1909, I think. The other was a Robin similar to the one mentioned above but as I recall, with somewhat less white in the wings and tail. It was seen just south of Jamestown in a migrating flock of normal Robins in the early spring of 1910.—R. L. Hand, *St. Maries, Idaho.*

An Old Record of a Chimney Swift Roost.—An interesting description of a Chimney Swift roost in a hollow sycamore near Marietta, Ohio, is contained on page 180 of T. H. Harris' "Journal of a Tour into the Territory Northwest of the Allegheny Mountains; Made in the Spring of the Year 1803". Boston (1805). It reads as follows:

"In connexion with this I may mention a large collection of feathers, found within a hollow tree, which I examined with the Rev. Mr. Story, May 18 ,1803. It is in the upper part of Waterford, about two miles distant from the Muskingum. A very large sycamore, which, through age, had decayed and fallen down, contained in its hollow trunk, five and a half feet in diameter and for nearly fifteen feet upwards, a mass of decayed feathers, with a small admixture of brownish dust and the exuvies of various insects. The feathers were so rotten that it was impossible to determine to what kind of birds they belonged. They were less than those of the pigeon; and the largest of them were like the pinion and tail feathers of the swallow.

"I examined carefully this astonishing collection, in the hope of finding the bones and bills, but could not distinguish any. * * *

"One circumstance which makes me suppose these the plumage of one vast flock of birds which took up winter quarters in this tree, and perished there; and not the moultings of annual visitors, is, that the feathers at the top were as much decayed as those at the bottom. As the trunk had split in falling down, I was able to examine the whole mass and found it of uniform appearance throughout. We judged that there were enough to have filled two waggons."

The above antedates the publication of Audubon's somewhat similar account by about thirty years.—A. W. Schorger, *Madison, Wis.*

Great Blue Heron Using Its Beak as a Spear.—This behavior, mentioned by the writer in a note on the bird life of southern Iowa, (Wilson Bulletin, March, 1936) has been questioned by William P. Hainsworth (*ibid.*, June, 1936). Once in the Green Bay region of Iowa, the writer observed a Great Blue Heron (*Ardea herodias*) spearing a fish. Securing the fish he found a single hole through it, indicating that the mandibles were closed at the time of the strike. Again in the Ozark Mountains, he saw a bird of the same species spear a fish which was estimated to weigh one pound. While making a photographic study of herons at Reelfoot Lake in northwestern Tennessee, he once more observed such a spearing. He also made note of immature herons striking at the object of their anger with open and also with closed beak.

The writer has seen the American Bittern (*Botaurus lentiginosus*) in the act of spearing food. The New Natural History states: "In the bittern's stomach may be found mollusks, crayfish, frogs, lizards, small snakes and fishes as well as insects. Such prey is captured with great address, by spearing, as the bird wades or walks stealthily along." Dr. Frank M. Chapman states (letter to present writer, August 27, 1936): "I have submitted your letter of August 23rd to the members of the ornithological staff of the American Museum of Natural History. It appears that there are on record two instances of a Great Blue Heron striking a dog in the eye in which only one hole was made and the bill apparently, therefore, was closed. In regard to the striking of fish the evidence advanced indicated that both methods of striking were used; possibly with larger fish the bill was closed and the fish was struck, but with smaller ones the bill

might be open." Dr. T. Gilbert Pearson has stated in the *National Geographic Magazine*, that "the sharp dagger of the heron spears fish". Presumably most of the species of herons are capable of using their beaks as spears, though the Boat-billed Heron (*Cochlearius cochlearia*) has a broad, blunt bill and would be unable to use it in this manner.—LAWRENCE E. HUNTER, *Dallas City, Illinois.*

[Coues (*Key to North American Birds*, 5th ed., 2:863) states: "Food... generally procured by spearing." Surber (in Roberts, "The Birds of Minnesota", 1:186) referring to the Black-crowned Night Heron, states: "So far as I could observe, the Herons seemed to grasp the fish between the mandibles and not to pierce the body as is usually done by the Heron Tribe." The Boat-billed Heron is placed in a separate family.—O. A. S.].

CORRESPONDENCE

In the review of Pettingill's recent monograph on The American Woodcock* written by Dr. T. C. Stephens in the WILSON BULLETIN (Vol. XLVIII, No. 4, December, 1936, p. 317) occurs this statement: "The author discounts the claim that the Woodcock carries the young away in the event of danger." Since this seemed to me a misinterpretation of Dr. Pettingill's text I wrote Dr. Stephens concerning the matter, and he has been kind enough to agree that such a misinterpretation might arise, and to suggest that I discuss briefly my views and experience relative to such an act on the part of the Woodcock. I therefore suggest as being more nearly in accord with Dr. Pettingill's discussion the statement, "The author discounts the claim that the Woodcock *purposely* carries the young away in the event of danger."

It is easy to realize that to a person who has not seen it the carrying of a young bird by a parent Woodcock must seem a fantastic performance. Nevertheless, on pages 333 *ff.* of Dr. Pettingill's volume there are a number of eye-witness accounts of the act to which credence is given, among them an account of two such occurrences observed by the writer. I shall attempt below to amplify the notes quoted there, part of which had already appeared in the *Auk* (Vol. 47, pp. 248-249, 1930).

The first of the two observations was made on May 7, 1926. My father, a trained observer, Mr. Charles Hefner, and the writer were engaged in spraying an apple orchard near French Creek, Upshur County, West Virginia. An adult Woodcock and two young were flushed, the young birds appearing to be well under half-grown. The birds scattered, but we followed the adult, our attention being called to its peculiar flight and appearance. Since there was little cover nearby we were able to follow it closely and to flush it almost immediately. When it rose again we could see clearly that it was carrying a young bird, apparently holding it between its (the adult's) thighs. The young bird dangled below the feet of the adult, and the flight had much the appearance of the ordinary "injury feigning" behavior, with which we were familiar. All three of us again pursued closely, and a third such flight was made, the young bird still in plain view. These flights did not average more than ten feet in length, and we could easily

*The American Woodcock. By Olin Sewall Pettingill, Jr. Vol. 9, No. 2, Memoirs Boston Society of Natural History. Boston, 1936. Pp. 168-391.

keep up with them. All three of us were in complete agreement as to what we saw.

On the fourth flight the old bird had dropped her burden, and this time she flew much farther. We examined the last point of departure and found there a young bird in downy plumage. I must confess that we made no attempt to weigh the young bird, nor did we consider, at the time, that we had seen an especially unusual sight. My father had had an account of such a performance from Dr. Edward A. Preble, of the U. S. Bureau of Biological Survey, and we accepted our own experience as a matter of course. It should be emphasized again that conditions for observation were unusually good, due to the poor cover nearby.

My second observation was made on the same farm on July 11, 1929. From the neighborhood of a small seep hole in a meadow an adult Woodcock and three young were flushed. As the old bird rose a fourth young bird was seen hanging between her(?) legs. This time I was so fortunate as to be carrying a good 6x glass. I ran to her quickly, and forced her into three more short flights before the young bird was abandoned. I should say that the young in this case was nearly half-grown. My impression is that the flights were made with the feet of the adult uncrossed, but I cannot be certain of this. The young bird carried was held well between the legs of the adult, and there was certainly no grasping of the young in the feet as has been reported by some observers. Th young bird appeared perfectly limp, and its feet dangled a considerable distance below those of the old bird.

Dr. Pettingill, who has not been so fortunate as to see this performance by the Woodcock, suggests a possible explanation for it. His theory (as given in his monograph) is that as an adult with young flushes to feign injury its feet become braced and its muscles grow tense with fear. If a young bird happens to be between the feet and legs at the moment of tension and flight it is raised from the ground and carried for a short distance. To this theory I can add nothing. Dr. Pettingill believes (and I agree) that a purposeful act of this nature on the part of the Woodcock is out of the question. Such intelligence is entirely too much to expect from a shore bird. For the fact that I have seen three and four such flights made in series I can only propose the explanation that the birds were followed so closely that their muscles did not relax between flights. It is common experience that after an "injury-feigning" flight a Woodcock will squat close to the ground and look around before it attempts to move away. In the cases noted above this pause each time was very brief, since we were within a few feet of the points of alighting.

Until the miracle of a moving picture camera in exactly the right hands at exactly the right time and place we shall in all probability have to be content with eye-witness accounts of this phenomenon. I am abundantly aware of human frailties of sight, as well as human abilities to stretch facts, but in my own case I can only fall back on the comforting reflection that "seeing is believing".

MAURICE BROOKS,
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PROCEEDINGS OF THE WILSON ORNITHOLOGICAL CLUB

By Lawrence E. Hicks, Secretary

The Twenty-second Annual Meeting of the Wilson Ornithological Club was held at Chicago, Illinois, on November 27, 28, and 29, 1936. The business and program sessions were held at the auditorium of the Chicago Academy of Sciences. Short business sessions were held Friday morning and Saturday afternoon. The Saturday morning session was devoted to the various aspects of the bird banding field, being a joint session with the Inland Bird Banding Association. The four program sessions included twenty-seven papers, slide talks, and movie presentations. The maximum attendance at each session was 52, 74, 71, and 84.

Saturday evening the Wilson Ornithological Club Annual Dinner was held at the Parkway Hotel. Dr. R. M. Strong, one of the three living founders of the Wilson Club, served as Toastmaster. Dr. Strong related some fascinating bits of the early history of the organization and exhibited early copies of the WILSON BULLETIN and of other amateur bird journals of the period. Another highlight of the evening was the showing of three reels of wildlife movies by Mr. F. R. Dickinson which had been taken by Alfred M. Bailey and himself in the American Rockies.

On Friday evening sixty-one members attended the Open House held at the Chicago Academy of Sciences. Everyone greatly enjoyed the opportunity afforded to renew acquaintances and to observe the study and exhibit collections. Some of the local habitat groups with the colored photographic enlargements for backgrounds were particularly fine. Among the special exhibits arranged for the meeting were twenty-six splendid bird paintings by Mr. Earl G. Wright and 120 photographic enlargements depicting most of the present day prominent ornithologists of America.

On Sunday morning a number of members participated in a field trip arranged for by the local committee to the extensive Brookfield Zoo.

BUSINESS SESSIONS

Short business sessions were held Friday morning and Saturday afternoon, President Van Tyne presiding.

The minutes of the 1935 meeting were approved without being read since they had previously been published in the WILSON BULLETIN (Vol. XLVIII, No. 1, pp. 56-70). The Secretary's and Treasurer's reports for the year 1936 were next read and approved. The Secretary's report indicated that during the past year 27 members had assisted in the membership campaign by making nominations resulting in the securing of one or more members each. A list was presented of the 170 new members secured during 1936, and previously confirmed by the electoral board. These were elected to membership. The report showed that there had been a net gain of 122 members in 1936, resulting in a total membership of 906, which exceeds by 122 members the previous high in membership total of 784 established in 1935. The largest size reached by the Wilson Ornithological Club in pre-depression days was 765 members in 1930. Thus the 650 new members secured during the five-year term of the retiring Secretary, have enabled the organization to offset the extremely heavy depression losses and emerge from that period of trying economic conditions with 141 more members than when it began.

The Secretary also presented a bundle of 148 letters received from members in thirty-one states, each of which, though unable to attend the Chicago meeting, had written a letter or note acknowledging the meeting notice, expressing regret at being unable to attend, and sending best wishes for the success of the meeting. Excerpts were read from several of them. The receipt of so many unsolicited letters indicates that the great bulk of the Wilson Ornithological Club membership consists of persons actively interested in furthering the ornithological studies and the educational and conservation work sponsored by the organization.

The Editor next summarized briefly the important phases of his work during the past year. In the absence of the Librarian, his report was read. President Van Tyne appointed Mr. F. Ridlen Harrell as the new Librarian to succeed Mr. F. P. Allen, the latter no longer residing in Ann Arbor, having accepted a new position in the East. The well prepared Treasurer's report, which was read and approved, indicated that the organization was in splendid financial condition.

The following temporary committees were appointed by the President: Nominations, Mrs. H. J. Taylor, R. M. Strong; Resolutions and Amendments, Olin S. Pettingill, Jr., A. F. Ganier, S. Charles Kendeigh; Auditing, Leonard W. Wing and Miles D. Pirnie.

The Committee on Resolutions offered the following resolutions, all of which were adopted by motion:

Resolved, that the Wilson Ornithological Club expresses its gratitude to the Chicago Academy of Sciences for providing an excellent place of meeting and for placing such splendid facilities at its disposal; to the Inland Bird Banding Association and the five local coöperating organizations for the good will and courtesies which they have extended, to the officials of the Brookfield Zoo for their kind invitation to visit the Zoo's interesting exhibits, and to the members of the local committee, William I. Lyon, Howard K. Gloyd, Earl G. Wright, Edward R. Ford, Margaret M. Nice, and Grace Z. Harsh, for their excellent arrangements which contributed so much to the success of the meeting.

Resolved, that the Wilson Ornithological Club commends the untiring, careful work of its Editor, Secretary, Treasurer, President, and its other officers, who by their faithfulness to heavy duty, have enabled the organization to add another successful year to its long existence.

The Committee on Nominations offered the following report:

President—Josselyn Van Tyne, Museum of Zoology, Ann Arbor, Michigan.
First Vice-President—Margaret M. Nice, Chicago, Illinois.
Second Vice-President—Lawrence E. Hicks, Ohio State University, Columbus, Ohio.
Secretary—Olin S. Pettingill, Jr., Carleton College, Northfield, Minnesota.
Treasurer—S. E. Perkins, III, 709 Inland Building, Indianapolis, Indiana.
Councillors—Albert F. Ganier, Nashville, Tennessee.
Alfred M. Bailey, Denver, Colorado.
S. Charles Kendeigh, Champaign, Illinois.

The report was adopted by motion, and the Secretary was instructed to cast a unanimous ballot for the nominees. This being done all were declared elected for the coming year.

The 1937 meeting was set for late December in connection with the meetings of the American Association for the Advancement of Science, at Indianapolis, Indiana. It was also voted that in the future, income from the endowment fund of the Wilson Ornithological Club would be used each year to pay for some special features of the WILSON BULLETIN, such as additional illustrations or an occasional color plate.

Another important item of business included a clarification of the duties of a number of the officers of the organization, in order to more effectively utilize the man power at its disposal in furthering the work of the Club. By agreement it was decided that the President would be responsible for preparing or delegating the preparation of obituary notices for the BULLETIN of all deceased members, the other officers and members to coöperate by reporting all deaths to the President or Secretary as promptly as possible. The First Vice-President assumes the task of canvassing the members for life memberships or for raises in membership status. The Second Vice-President agrees to aid the work-burdened Secretary by assisting in the membership campaign, assuming a quota of at least twenty-five new members secured each year. The Treasurer, as in the past, will make every attempt to maintain the size of the membership list, by special correspondence to regain where possible delinquent members. It is hoped that special appointees can work to enlarge the subscription list of the BULLETIN in institutions, high schools, and libraries, and that the three councillors will contribute to the membership drive by assuming a quota of five or ten new members per year each.

PROGRAM OF PAPERS

The papers were presented in the following order, which is very slightly different from the announced program. All meetings were held in the Auditorium of the Chicago Academy of Science, except the Annual Dinner, which was held at the Parkway Hotel.

FRIDAY MORNING SESSION

1. The Chicago Academy of Sciences and Its Collections. (15 minutes). Earl G. Wright. Chicago Academy of Sciences, Chicago, Illinois.
2. Notes on the Summer Birds of Roan Mountain, Tennessee. (20 minutes). Albert F. Ganier, 2507 Ashwood Avenue, Nashville, Tennessee.
3. Ornithological Opportunities. (15 minutes). (Lantern). Leonard W. Wing, University of Wisconsin, Madison, Wisconsin.
4. Report on Progress of Publication of a Bibliography of Birds. (15 minutes). R. M. Strong, 5840 Stony Island Avenue, Chicago, Illinois.
5. Striking Cases of Intelligent Behavior in the Clapper Rail. (20 minutes). (Lantern). Olin S. Pettingill, Jr., Carleton College, Northfield, Minnesota.
6. Dr. J. M. Wheaton—A Pioneer Ornithologist of Ohio. (15 minutes). Mrs. H. J. Taylor, 900 Santa Barbara Road, Berkeley, California.
7. A Yucatan Swift Roost. (15 minutes). Josselyn Van Tyne, Museum of Zoology, Ann Arbor, Michigan.

FRIDAY AFTERNOON SESSION

8. Wildlife Cycles. (20 minutes). (Lantern). Leonard W. Wing, University of Wisconsin, Madison, Wisconsin.

9. Variations in the Weight of Birds. (20 minutes). (Lantern). S. Charles Kendeigh, Experimental Zoology Laboratory, Champaign, Illinois.
10. Wildlife Research at the W. K. Kellogg Bird Sanctuary of Michigan State College. (20 minutes). (Lantern). Miles D. Pirnie, Box 174, Battle Creek. Michigan.
11. Observations on the Prairie Chicken in Central Illinois. (10 minutes). Ralph E. Yeatter, State Natural History Survey, Urbana, Illinois.
12. A Woodcock Biography. (30 minutes). (Lantern). Olin S. Pettingill, Jr., Carleton College, Northfield, Minnesota.
13. Black-crowned Night Heron and Upland Plover Orphans. (25 minutes). (16 mm. motion pictures). Elizabeth A. Oehlenschlaeger, 926 E. Kilbourn Avenue, Milwaukee, Wisconsin.
14. An Analysis of the Weights of 12,000 Birds of 217 Species. (20 minutes). (Lantern). Lawrence E. Hicks, Ohio State University, Columbus, Ohio. (Read by Title).

Saturday Morning Session

15. Bird Banding Report from North Dakota. (15 minutes). (Charts). O. A. Stevens, State College, Fargo, North Dakota.
16. Homing Experiments with Birds. (20 minutes). (Lantern). William I. Lyon, 124 Washington Street, Waukegan, Illinois.
17. Do Young Birds Return to the Place of Their Birth? (15 minutes). Margaret M. Nice, 5708 Kenwood Avenue, Chicago, Illinois.
18. The Importance of Banding in Waterfowl Conservation. (15 minutes). (Lantern). Miles D. Pirnie, Box 174, Battle Creek, Michigan.
19. Studies of 60,000 Captured and 35,000 Banded European Starlings. (30 minutes). (Slides). Lawrence E. Hicks, Ohio State University, Columbus, Ohio. (Read by Title).

Saturday Afternoon Session

20. The American Coot in Iowa. (15 minutes). George O. Hendrickson, Logan J. Bennett, Charles E. Friley, Jr., Department of Zoology and Entomology, Iowa State College, ,Ames, Iowa.
21. Three Years' of Hawk Mountain Sanctuary. (30 minutes). (16 mm. motion pictures). Maurice Broun, Route 1, Orwigsburg, Pennsylvania.
22. A Rational Basis for Conservation. (30 minutes). (Lantern). William Vogt, National Association of Audubon Societies, 1775 Broadway, New York City.
23. From the Top of a Tamarack Tree. (20 minutes). (Lantern). S. E. Perkins, III, 709 Inland Building, Indianapolis, Indiana.
24. Nesting of the Red-tailed Hawk in Northern Indiana. (20 minutes). (16 mm. motion pictures). A. Trevenning Harris, 504 Broadway, Gary, Indiana.
25. The Changing Status of Some of Our Birds as Regards Abundance. (25 minutes). C. W. G. Eifrig, 1029 Monroe Avenue, River Forest, Illinois.
26. Nesting of Cliff Swallows on a River Lock and Dam. (15 minutes). (16 mm. motion pictures). H. S. Vaughn, Nashville, Tennessee. (Read by Title).

REPORT OF THE SECRETARY FOR 1936*

To the Officers and the Members of the Wilson Ornithological Club:

During the past year, the intensive campaign for new members was continued by the Secretary, in an attempt to increase the size of the organization to at least 900 members and thus make available sufficient income to expand the organization's activities and finance a larger WILSON BULLETIN. It is a pleasure to report that this goal has now been reached. The membership now totals 906. This is 122 more than the 784 of last year, and 141 more than the pre-depression high of 765 in 1930. Thus the Wilson Ornithological Club is decidedly larger than ever before.

This campaign has required the expenditure of no little time and effort, as 2,732 membership prospects were solicited and 1,073 additional letters written by the Secretary in 1936. Members of the Club gave splendid assistance by sending in numerous names of prospective members for solicitation. Our membership is especially urged during the coming year to acquaint friends with the benefits of the organization and forward to the officers the names of all membership prospects. We will do the rest.

New members secured during the five-year term of the retiring Secretary were as follows: 1932, 113; 1933, 114; 1934, 112; 1935, 141; and 1936, 170. Total for the five years, 650. The 170 new members for 1936 were: Sustaining, 1; Active, 37; and Associate, 132. The new members were distributed through 42 states and provinces: Illinois, 25; Ohio, 18; California, 14; Wisconsin, 14; Michigan, 11; Iowa, 8; Missouri, 6; Indiana, 5; Kentucky, Nebraska, and Texas, 4 each; Maine, Georgia, Minnesota, New York, Pennsylvania, New Hampshire, Arkansas, and Connecticut, 3 each; Alabama, Oklahoma, New Jersey, Colorado, Florida, North Dakota, Maryland, New Mexico, Utah, and British Columbia, 2 each; Arizona, South Carolina, Tennessee, Alberta, Oregon, Delaware, Quebec, Virgin Islands, Virginia, South Dakota, Washington, D. C., Kansas, and Massachusetts, 1 each.

Disregarding some duplications in nominations, the various members responsible for the applications of new members, were as follows: Lawrence E. Hicks, 149; T. C. Stephens, 10; S. E. Perkins, III, 8; Mabel Slack, Warren W. Chase, and Frank Blanchard, 3 each; Josselyn Van Tyne, A. F. Satterthwait, John J. Stophlet, P. F. English, and G. A. Ammann, 2 each; and the following 16 persons, 1 each: Lynds Jones, R. E. Yeatter, Olin S. Pettingill, Jr., Ward Klepfer, William R. Lodge, A. P. Larrabee, D. Elmer Johnson, Elmer Knapp, Dora Moore, H. H. Forsthoefel, Elizabeth Oehlenschlaeger, Mrs. Annabel K. Hinman, William C. Baker, J. J. Murray, W. H. Burt, and David Damon.

The total number of members lost during the year 1935 from all causes was 49, 1 being Honorary, 3 Sustaining, 14 Active, and 31 Associate. A considerable number of former members have reinstated during the year. Thus there has been a net gain of 122 members during 1936.

This leaves the present membership of the Club at 906, distributed as follows: Honorary, 5; Life, 11 (2 also are Honorary); Sustaining, 40; Active, 212; Associate, 640.

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*Revised to the end of 1936.

The Secretary wishes to take this opportunity to thank the many members who have assisted in the membership campaign, helped with the staging of the annual meeting, or otherwise advanced the work of the Wilson Ornithological Club during the past year. It has been particularly gratifying to have received in all several hundred letters from members during the year giving news of their own work, ideas and suggestions on ornithological and conservation topics, or words of encouragement and constructive criticisms of the work being done. It is greatly regretted that the pressure of other duties has made it impossible to answer many of these directly or to reply save by abbreviated note.

The Secretary values highly the various experiences, the multitude of contacts and the innumerable friendships gained during his five-year term of office now completed. He wishes to thank all concerned for the countless courtesies extended and the W. O. C. for the opportunity to have served a most deserving organization.

Respectfully submitted,

LAWRENCE E. HICKS, *Secretary.*

REPORT OF THE LIBRARIAN FOR 1936

I have the honor to present herewith the sixth annual report of the Librarian of the Wilson Ornithological Club.

I accept the position of Librarian of the Wilson Ornithological Club with pleasure. I am sure that I shall enjoy this relationship.

I find the library in a well organized and workable condition. The material has been classified and arranged on the shelves to give the greatest amount of service. I shall endeavor to keep the library as I find it and add to it whatever my experience tells me will be beneficial.

In a general survey of the library I find that all the sets are not complete. Dating from 1932 or 1933 I find many volumes missing from the sets. An early shipment of the exchanges from the Editor would give me an opportunity to find out what is needed to complete sets and know which sets are actually complete. This valuable exchange should not be permitted to lag as it affects the service and efficiency of the library.

We have received gifts from those interested in the bird collection and from members of the Wilson Ornithological Club. This past year we received 101 pieces of unbound material. This brings the unbound material to a total of 1578 pieces. The total for bound volumes remains 190. Some sets that have had noticeable omissions in them have been filled and new subscriptions have been received. I wish to thank the donors for this fine spirit of coöperation.

Respectfully submitted,

F. RIDLEN HARRELL, *Librarian.*

Ann Arbor, Michigan, November 21, 1936.

REPORT OF THE TREASURER FOR THE YEAR 1936

Receipts for 1936

January 6, 1936, Balance from W. M. Rosene			$ 766.75
From Membership Dues:			
1 Associate member for 1933	$ 1.50		
1 Associate member for 1934	1.50		
5 Associate members for 1935	7.50		
325 Associate members for 1936	487.50		
Remainder on two for 1936	1.25		
10 Associate members for 1936 ($1.75)	17.50		
73 Associate members for 1937	109.50		
1 Associate member for 1937 ($1.75)	1.75		
1 Associate member for 1938	1.50		
1 Active member for 1934	2.50		
3 Active members for 1935	7.50		
131 Active members for 1936	327.50		
33 Active members for 1937	82.50		
2 Active members for 1938	5.00		
24 Sustaining members for 1936	120.00		
10 Sustaining members for 1937	50.00		
Total received from membership dues			$1,224.50
From Subscriptions:			
1 Subscription for 1935	1.50		
33 Subscriptions for 1936	49.50		
5 Subscriptions for 1936 ($1.75)	8.75		
1 Subscription for 1936 ($2.50)	2.50		
17 Subscriptions beginning September, 1936	25.50		
2 Subscriptions, fractional	2.13		
4 Subscriptions for 1937	6.00		
1 Subscription beginning September, 1937	1.50		
Total received from Subscriptions			97.38
Miscellaneous receipts:			
Back numbers of the Bulletin sold	20.20		
Contributions to publication fund	110.98		
Replacement of check	2.50		
Total miscellaneous receipts			133.68
Total receipts, including old balance			$2,222.31

Disbursements for 1936

Printing four issues of the Bulletin	$1,085.51	
Cost of halftones, cuts, etc.	193.93	
Other expenses in Editor's Office	92.26	
Total publication costs		$1,371.70
Expenses in Secretary's Office	131.89	
Expenses in Treasurer's Office	68.35	
Printing	49.27	
Refunds and miscellaneous expenses	20.08	
Total general costs		$ 269.59
Total disbursements for 1936 (itemized in report)		1,641.29
Balance on hand November 24, 1936		581.02
Total		$2,222.31

Endowment Fund

January 8, 1936, Balance by check from W. M. Rosene	$ 5.09
September 23, 1936, Securities from W. M. Rosene, as follows:	
U. S. Savings Bonds in the sum of	675.00
U. S. Postal Savings Bonds (coupon) in the sum of	780.00
Interest coupons on Postal Savings Bonds, due January 1, 1936, and July 1, 1936, and deposited in savings account with the Fletcher Trust Company at Indianapolis	19.50
Total Endowment Fund, November 24, 1936	$1,479.59

The bond numbers have been sent to the Secretary for record.

Respectfully submitted,

S. E. Perkins, III, *Treasurer*

Indianapolis, Indiana, November 24, 1936.

Report of the Auditing Committee

The undersigned have examined the report of the Treasurer of the Wilson Ornithological Club for the fiscal year ending November 24, 1936, and vouchers accompanying the same, and have found them correct.

Respectfully submitted,

Miles D. Pirnie.
Leonard W. Wing.

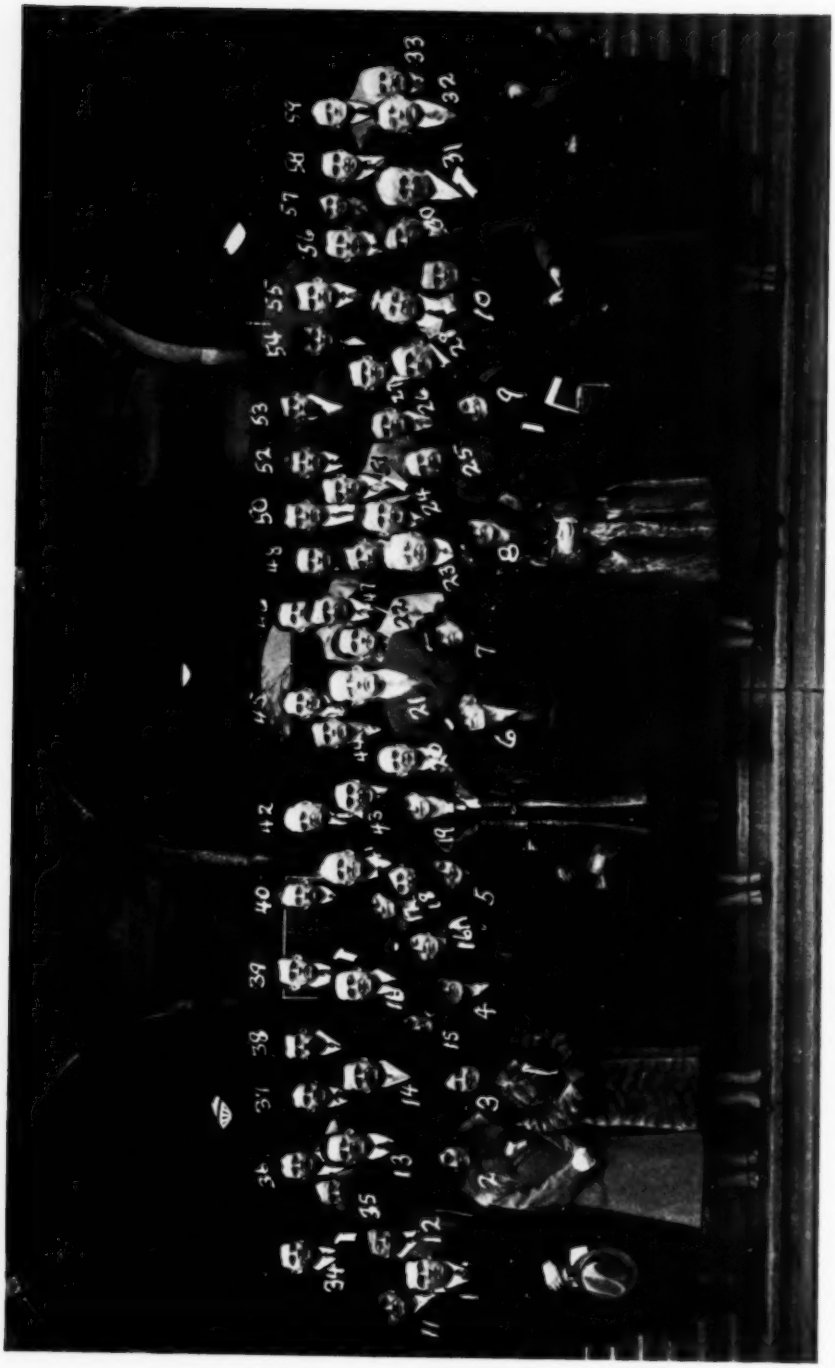

FIG. 7. Group at the Annual W. O. C. Meeting, Chicago, 1936.

Attendance

The 1936 meeting was one of the most successful in the history of the organization. Although the out-of-town attendance was only fair, fifteen states were represented. The local attendance was the second largest and the total attendance the fourth largest of the twenty-two annual Wilson Ornithological Club meetings held to date. Many local visitors failed to register. Additional unregistered visitors attended the Open House, the annual dinner, or the field trip.

Thirty-two universities, colleges, museums, and other institutions were represented in the attendance at the Chicago meeting. These included: National Association of Audubon Societies, University of Nebraska, Morningside College, Ohio State University, University of Chicago, Chicago Medical School, Northwestern University, Ohio Wildlife Research Station, Michigan Museum of Zoology, Michigan State College, University of Michigan, Yankton College, University of Wisconsin, Illinois Natural History Survey, University of Illinois, Loyola University of Medicine, Chicago Academy of Sciences, Field Museum, Principia College, U. S. Soil Conservation Service, U. S. Biological Survey, Iowa Wildlife Research Station, Kennicott Club, Illinois Audubon Society, Chicago Ornithological Society, Inland Bird Banding Association, Carleton College, Iowa State College, Kellogg Bird Sanctuary, University of Louisville, Emergency Conservation Committee, Isaac Walton League of America, and Denison University.

KEY TO GROUP PHOTOGRAPH OF THE W. O. C. MEETING AT CHICAGO, 1936

1, Lawrence E. Hicks. 2, Mrs. Paul Downing. 3, Margaret R. Knox. 4, Mrs. Clyde C. Ohliger. 5, Mrs. Olin J. Pettingill, Jr. 6, Mrs. H. J. Taylor. 7, Mrs. Myron H. Swenk. 8, Grace Graves. 9, Exean Woodard. 10, Mrs. F. J. Hamerstrom, Jr. 11, Myron H. Swenk. 12, Miles D. Pirnie. 13, Paul Downing. 14, Thursten I. Wright. 15, Grace Harsh. 16, Roy V. Komarek. 16, Miss Mitchell. 17, Elizabeth A. Oehlenschlaeger. 18, Mrs. Lawrence E. Hicks. 19, Mrs. Leonard W. Wing. 20, S. E. Perkins, III. 21, Josselyn Van Tyne. 22, Olin S. Pettingill, Jr. 23, C. W. G. Eifrig. 24, S. Charles Kendeigh. 25, Margaret M. Nice. 26, William Vogt. 27, Orion O. Smith. 28, Albert F. Ganier. 29, Harold A. Hayes. 30, Mr. Smith. 31, William I. Lyon. 32, Robert W. Glenn. 33, John F. Gall. 34, Earl G. Wright. 35, Charles E. Gillham. 36, James S. White. 37, Sidney H. Horn. 38, Pierce Brodkorb. 39, Walter L. Necker. 40, Howard K. Gloyd. 41, Leonard B. Nice. 42, T. C. Stephens. 43, Leonard W. Wing. 44, F. J. Hamerstrom, Jr. 45, Gordon Pearsall. 46, L. V. Domm. 47, George O. Hendrickson. 48, Charles T. Clark. 49, Mr. Brown. 50, C. T. Black. 51, Karl Bartel. 52, Harold Hanson. 53, Frank Bellrose, Jr. 54,————, 55, Frank Pitelka. 56, B. J. Bujak. 57,————. 58, S. Camras. 59,————. Copies of this 1936 photograph may be obtained for fifty cents each by addressing the Ray Studio, 130 Washington Street, Waukegan, Illinois.

REGISTER OF ATTENDANCE AT THE CHICAGO MEETING

From California: Mrs. H. J. Taylor, Berkeley. From Illinois: Paul A. Jones, Berwyn; Karl Bartel, Blue Island; Mr. and Mrs. Cyril E. Abbott, Mrs. Mabel Andrew, S. C. Bacon, Amy G. Baldwin, Walter Bateman, James E. Beecher, W. J. Beecher, Mary A. Bennett, C. T. Black, Harvy Blank, E. M. Bolton, Frank H. Booth, Bay Brice, Mr. Brown, S. Camras, Charles T. Clark, Aulden D. Colbe, Margaret Dayer, L. V. Domm, W. H. Dornke, Walter M. Dorys, Donald P. Duncan, J. M. Essenberg, John F. Gall, Howard K. Gloyd, V. O. Graham, Grace Graves, Harold Hanson, Flora E. Halliney, Harold Hanson, Grace Harsh, Mrs. M. Hausler, O. C. Hynning, William L. Kannapel, Adelbert Klaptoz, Roy V. Komarek, Sally H. Lawson, Dr. Alfred Lewy, S. B. Locke, Mrs. Charles F. McElroy, Miss Mitchell, Walter L. Necker, P. Delno Nelson, Leonard B. Nice, Margaret M. Nice, M. Neptune, Anna Newman, Mr. and Mrs. Clyde C. Ohliger, Fred Pattee, Robert E. Smart, Helen Lea Smith, R. M. Strong, C. H. Thordarson, Harold O. Wiles, Mrs. Helen M. Miles, Burtis H. Wilson, Exean Woodard, Earl G. Wright, Thursten I. Wright, E. W. Youngren, Chicago; George B. Happ, Elsah; Albert A. Borden, Jr., Howard Berolzheimer, L. W. Crow, S. C. Denham, R. V. Hagen, Mrs. F. Pattee, Evanston; Mr. and Mrs. Paul Downing, James S. White, Highland Park; Harold A. Hayes, Hubbard Woods; Leslie Wheeler, Lake Forest; Frank Pitelka, Lyons; Ruby E. Nolin, Milford; Mr. and Mrs. Arthur W. Wood, Moline; Gordon Pearsall, Oak Park; Marion Clow, Lake Forest; Frank Bellrose, Jr., Ottawa; Alma Kannapel, Peoria; C. W. G. Eifrig, Mrs. Walter D. Harrick, River Forest; Orpheus Moyer Schantz, Riverside; Orion O. Smith, Rockford; R. A. Huggin, Mr. and Mrs. S. Charles Kendeigh, Ralph E. Yeatter, Urbana; William I. Lyon, Waukegan; Louis G. Flentge, Wheeling; V. H. Condon, Stephen S. Gregory, Jr., Mary S. King, Winnetka. From Indiana: A. T. Harris, Gary; Margaret R. Knox, Mr. and Mrs. S. E. Perkins, III, Indianapolis. From Iowa: C. E. Gillham, George O. Hendrickson, Sidney H. Horn, Ames; T. C. Stephens, Sioux City; Mrs. C. A. Michael, Walker. From Kentucky: Cleveland P. Grant, Covington; William M. Clay, Louisville. From Massachusetts: Maurice Braun, Orleans. From Minnesota: Mr. and Mrs. Olin S. Pettingill, Jr., Northfield. From Michigan: Pierce Brodkorb, Josselyn Van Tyne, Ann Arbor; Miles D. Pirnie, Battle Creek; B. J. Bujak, East Lansing. From Nebraska: Mr. and Mrs. Myron H. Swenk. From New York: William Vogt, New York City. From Ohio: Mr. and Mrs. Lawrence E. Hicks, Columbus; Ward Klepfer, Granville. From Pennsylvania: Robert W. Glenn, Pittsburgh. From South Dakota: A. P. Larrabee, Yankton. From Tennessee: Albert F. Ganier, Nashville. From Wisconsin: L. J. Cole, Mr. and Mrs. Leonard W. Wing, Madison; Mr. and Mrs. F. J. Hamerstrom, Jr., Necedah; Elizabeth A. Oehlenschlaeger, Mrs. Louis Roberts Taylor, Milwaukee.

Summary of Attendance: California, 1; Illinois outside of Chicago, 35; Chicago, 62; Indiana, 4; Iowa, 5; Kentucky, 2; Massachusetts, 1; Minnesota, 2; Michigan, 4; Nebraska, 2; New York, 1; Ohio, 3; Pennsylvania, 1; South Dakota, 1; Tennessee, 1; Wisconsin, 7. Total attendance, 132. Total outside of Chicago, 70. Maximum at each program session: Friday morning, 52; Friday afternoon, 74; Saturday morning, 71; Saturday afternoon, 84. Number at Open House at the Academy, 61. Number at annual dinner, 54. Number of papers listed on the program, 27.